

# CONTINUITY ACROSS SCALES IN ARCHITECTURE:

## Details and Their Relation to the Whole in a Friends Meetinghouse

by

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B.A. University of Wisconsin, 1976

Submitted in Partial Fulfillment of the Requirements for the Degree of

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Departmental Committee for Graduate Students

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## Continuity Across Scales in Architecture:

### Details and Their Relation to the Whole in a Friends Meetinghouse

by Jay Weber

Submitted to the Department of Architecture on June 8, 1981, in partial fulfillment of the requirements for the degree of Master of Architecture.

#### ABSTRACT

The following thesis weaves together three major themes. First, it is a design investigation of architectural continuity across scales, seeking to identify principles and attitudes by which design decisions at every level can reinforce one another and produce a rich and understandable whole. Second, I use my own experiences in the Maine woods as an example of how the natural world can be a useful reference for the built environment. Finally, the work is an attempt to integrate those two themes through an understanding of architecture as language and composition.

The design itself is a series of studies for a Friends (Quaker) Meetinghouse and Center of approximately 14,000 square feet. The design uses the site of the present Cambridge Meeting on Longfellow Court, in Cambridge.



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## Acknowledgements

I would like to thank

Jan Wampler, my advisor, as a teacher, a designer, and  
a friend,

Maurice Smith and Stanford Anderson, my readers, for their  
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## Preface

"Although there is no authentic design and pattern for a Friends Meeting House, they are easily recognizable as breathing a quality of simplicity, courage, cleanness and warmth. They actually provided well for the space and functional needs of the religious society. If any criticism can be justly made of these buildings it would probably be reflective of their careful concern not to provide anything beyond their basic and readily recognized needs. Perhaps by this they may have unintentionally curtailed their potential usefulness to others in an active expression of their spiritual exercise by their reserve and conservatism in structure."

(Minutes of the Concrete Proposal Committee, Friends Meeting at Cambridge, 1979)

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The subject of the following design investigation is a Friends (Quaker) Meetinghouse. As such, it must relate to a tradition of Meetinghouses, many of which were built before the Declaration of Independence. Establishing a correct and meaningful relationship to that tradition is a topic worthy of its own thesis. While the present thesis focuses on other issues, there are three attitudes which the earlier meetinghouses exemplified and which I have attempted to address in the design.

First, Friends do not regard the meetinghouse as sacred space, and often hold meetings in members' homes, in schools, tents, and out of doors. Therefore, the building need not be regarded as an object, or attempt in any way to elevate itself above, or differentiate itself from, its surroundings. While the meeting room itself requires quiet and security, it need not be isolated. An attitude of gentle transition and friendly dialogue is appropriate.

Second, the meetinghouses of the past exemplified the Quaker testimony of simplicity, in the sense of clarity, appropriateness, and sincerity in the use of materials, in contrast to superfluity, ostentation, and fashion.

Finally, the meeting is a community of people, each with their own character and life. The meetinghouse is to be valued only inasmuch as it shelters and provides for the activities of those people. The people give life to the building, and in return, the building should accommodate them graciously.



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THE sun was up so high when I waked that I judged it was after eight o'clock. I laid there in the grass and the cool shade thinking about things, and feeling rested and ruther comfortable and satisfied. I could see the sun out at one or two holes, but mostly it was big trees all about, and gloomy in there amongst them. There was freckled places on the ground where the light sifted down through the leaves, and the freckled places swapped about a little, showing there was a little breeze up there. A couple of squirrels set on a limb and jabbered at me very friendly.

(Twain. 1951, p. 40.)

Such man-made complexes are imitation of landscapes; at their best they provide us with something of the stimulation we get from a brief walk through a valley among trees and open fields; they satisfy for the time being our craving for contact with a variety of forms and spaces and lights and sounds.

(Jackson. 1970, p. 83, referring to Grand Central Station in New York and Vienna Hofburg.)

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# Introduction

The following thesis examines three aspects of a design process. First, it examines briefly one possible response to a specific site. Second, using that response as a starting point, it proposes three principle means for organizing the building. Finally, it looks closely at one room in the building in order to explore ways in which the character of every detail can contribute to an understanding of the whole building.

These three aspects are not separate issues. My intention is to show that design of an understandable building requires decisions at one level to reinforce decisions at every other level. I use two themes to unify the concept of the design; my own experiences in the woods and the concept of architecture as a language. The former theme shows how the natural landscape can be a useful reference for the built environment. The latter theme is a common-sense discussion of ways in which material objects communicate.





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Returning to camp from a trip on the Allegash River, I bathe in the lake and put on fresh, clean clothes. Teeth brushed, hair washed, I suspect I still smell of wood smoke. From my tent I hear the clang of the bell for campfire. Out in front I see and hear kids scrambling from the tents. A diffuse and human landslide bounces down the hill toward the clearing and the lodge. I snap shut my book and start slowly down the hill. A couple of campers mill about on the lodge porch like bees before a hive. I can see the yellow light of the kerosene lamps inside, and hear the strains of the first song, "Oh the fox went out on a chilly night." I glance down at the pond, ruffled by a breeze. I hear the sound of my feet on the wooden lodge porch. A loon calls out on the lake. The creak of the screen door is so familiar I seem to hear it above the singing.

I nudge past people close to the doorway and work my way inside. It's dusk outside and even darker in here under the pole rafters and birch bark ceiling. Fred is pantomiming in time to the music. Harry sits in a pool of light from a coleman lantern, paging through his book for some adventure to relate to us tonight. A fire roars in the fireplace. I'm back inside a real building for the first time in sixteen days.

- 1 IDENTIFICATION WITH A PLACE, promotional drawing for Flying Moose Lodge, in East Orland, Maine. The "Lodge" is the building with the porch and chimney at the base of the tall pine tree.

ORIENTATION/DISORIENTATION, Topographic Map, a portion of the Orland Quadrangle. This is where the "lost" sketch took place. While a five mile hike in some directions would have brought us to a road, we had no way of knowing which way. The denseness of the woods, the similar contours on the various hillsides, and the lack of a distinct direction makes orientation in this landscape a challenge.



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Lost! We had left our campsite early that morning with a light lunch, a topographic map and a dime store compass, and now we were lost. Five fifteen year old boys and a seventeen year old counselor sitting in the middle of an abandoned logging road in the St. Regis Paper Company forests in central Maine. My limited training in reading map and compass rendered them useless. We labored up and down four or five steep hillsides, crisscrossed streams and logging roads, followed some of them for a mile or so, then gave up and struck off in a different direction.

The sounds of the forest, usually so comforting and rhythmic, seemed eerie and disconnected. The sunlight, bright and cheerful in the morning, had become melancholy--almost menacing. Dusk began to fall. Lunch had been devoured hours ago. I was maintaining a sort of constant pep talk, as if the string of words might lead us out of the forest. The kids were close to panic. Had I been alone, I probably would have been scared to death.

I was trying to figure out if we were going in circles or moving in a straight line. We had no idea of which way to go to find our camp, a road, a lake or a house.

Suddenly, we emerged from the woods on a logging road, in sight of a tumble-down logging camp which we recognized as being just downstream from our own lean-to. With whoops all around, we broke into a run. In twenty minutes, we were back in camp with a pot of soup simmering on the fire.



To become completely lost is perhaps a rather rare experience for most people in the modern city. We are supported by the presence of others and by special way-finding devices: maps, street numbers, route signs, bus placards. But let the mishap of disorientation once occur, and the sense of anxiety and even terror that accompanies it reveals to us how closely it is linked to our sense of balance and well-being. The very word "lost" in our language means much more than simple geographical uncertainty; it carries overtones of utter disaster.

(Lynch. 1960, p. 4.)

A good environmental image gives its possessor an important sense of emotional security. He can establish an harmonious relationship between himself and the outside world. This is the obverse of the fear that comes with disorientation; it means that the sweet sense of home is strongest when home is not only familiar but distinctive as well.

(Lynch. 1960, p. 4.)

The preceeding sketches illustrate the contrasting feelings of being safe and being lost. The comfort of the first and the panic of the second situation arose from the ability or inability of the participants to locate themselves in the landscape, relative to their basic needs for shelter, warmth, nourishment and companionship. Clearly, in architecture, achievement of Vitruvius' oft quoted "firmness, commodity and delight" includes provision for human orientation and identification.

Orientation and identification are the results of continuity of experience. We know where we are because we know how to get to the things we want and need. In a building and in all the parts of a building, it is necessary to establish a clear relationship to the surrounding environment, and an understandable connection to the wider world. This relationship and connection is what I refer to as continuity.

Continuity is not necessarily the result of literally continuous forms, spaces, volumes, masses, etc. It is instead those qualities in a design which allow a user to sense the coherence and unity of a building and its relationship to the surrounding physical environment. These qualities are essentially communicative, and therefore have some of the character of language and composition.





## Response to the Site

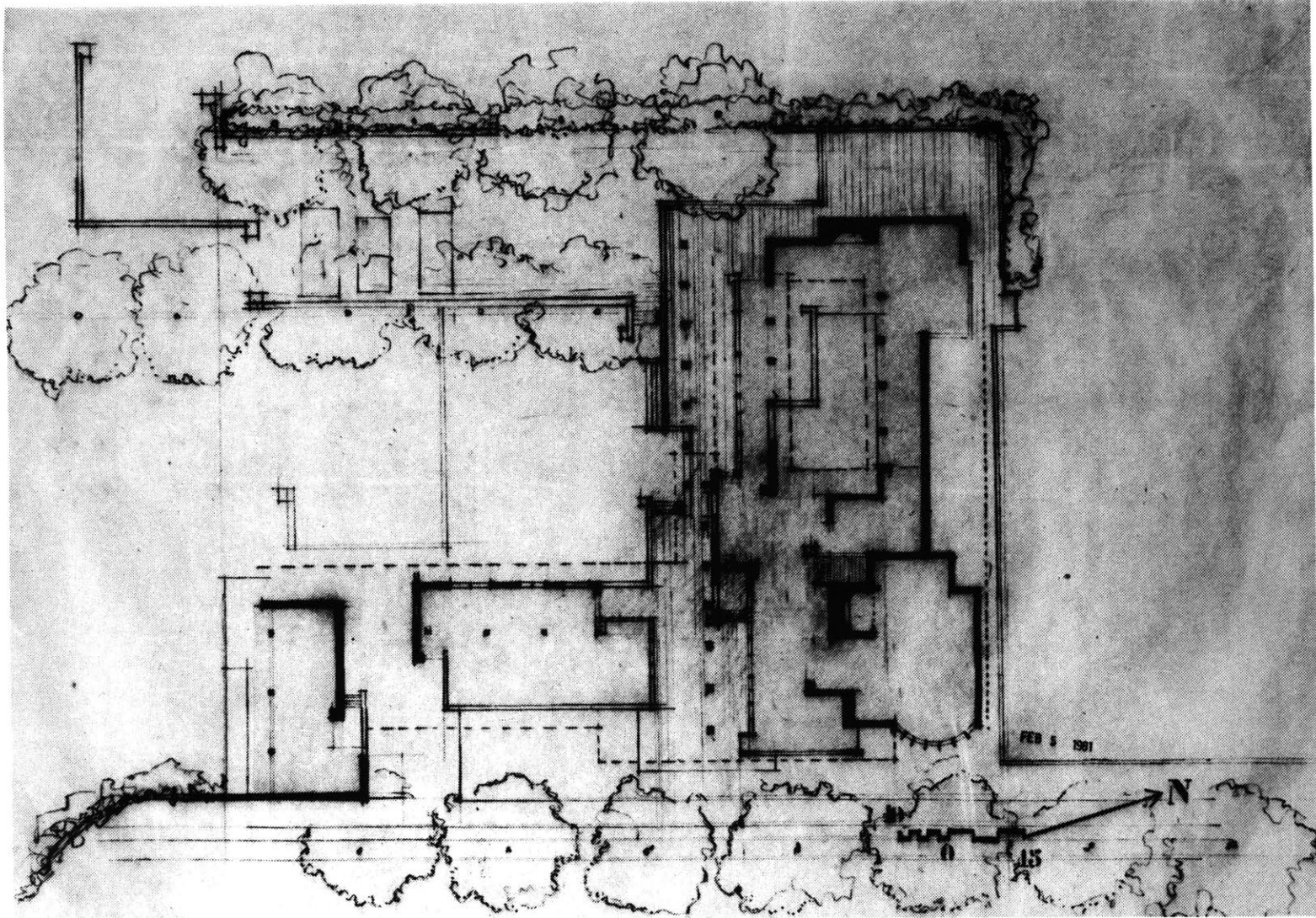
In the woods a person needs recognizable references which can tie one back to civilization and the security of the built world. In the city, the opposite is true. People need references to the natural landscape. In the design at hand, the site borders Longfellow Park and Court, and is a short and direct walk across Mt. Auburn Street and Memorial Drive to the Charles River. I have chosen to extend the park onto the site and use the notion of being "among the trees" as a theme both literally and "linguistically" to organize the building and establish continuity with the Cambridge landscape and the larger natural order.

The largest ordering on the site, then, is to establish a grove of trees, which, together with the building itself, defines an outdoor garden opening to the south and protected from the street. This arrangement acknowledges the primary source of direction throughout the world--the sun--as well as reinforcing the direction of movement and existing buildings along Longfellow Court.

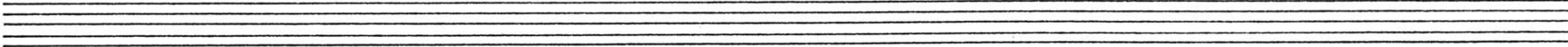


- 4 SITE PLAN, LONGFELLOW COURT, drawn at 100th scale, showing Longfellow Park and Court, the Charles River, and the ordering of trees and buildings on the site. Linear arrangement of trees along the court reinforce direction of movement toward the river.





5 PLAN STUDY, at 1/16th scale.



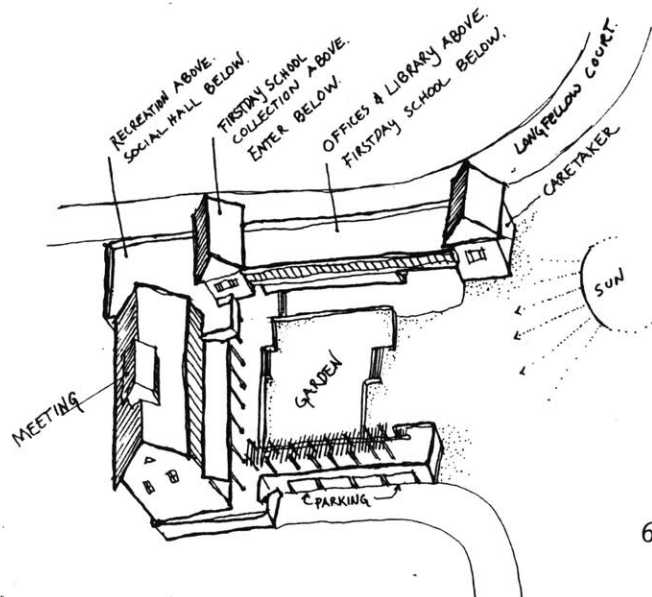


When setting up a campsite in the woods, one will notice among experienced campers an easy and unconscious tendency toward order. A place for the fire is chosen, and rough log seats are drawn up to it. Tents are pitched and packs placed carefully under the rainfly. Generally, the tents face toward the fire. Often, the group of tents creates a containment with the fire in the middle.

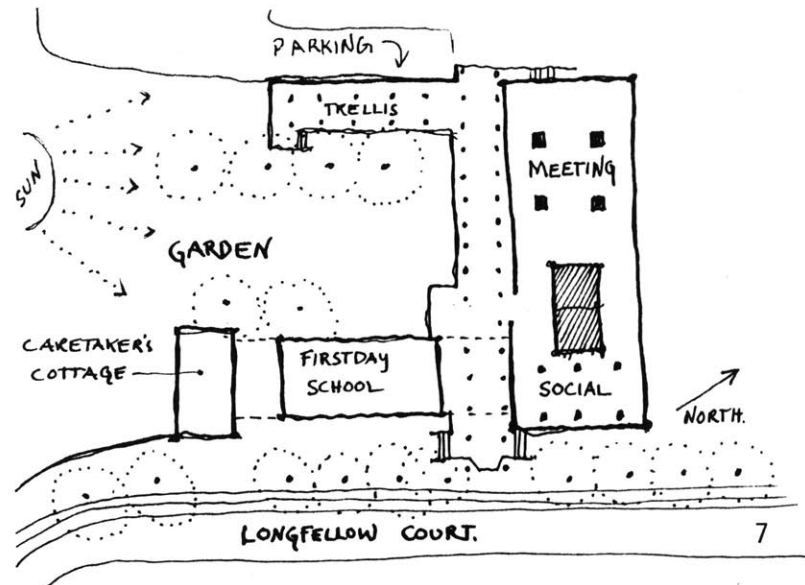
In the meeting house, the garden is the central organizing element. It is a positive outdoor space, shaped by the building and landscaping. The containment and regular shape establish a reciprocity with the ongoing and irregular outdoors. Whereas the general conditions is for the outdoors to surround and define a building, here the building surrounds and defines the outdoors. In addition, the north side of the building is kept straight, steep and severe, while the southern, garden side is broken up and animated by low walls, trellises and plantings.



The building is made up of three main parts, connected at the second floor. The meetinghouse itself, protected from the street, is a two story space on the north side of the garden. The social spaces, Firstday school rooms, offices and library are arranged along the east side of the garden forming a boundary between the street to the east and the garden to the west. The caretaker's house fronts on the street at the southeast corner of the garden. A trellised walk, trees, and plantings form the western edge.

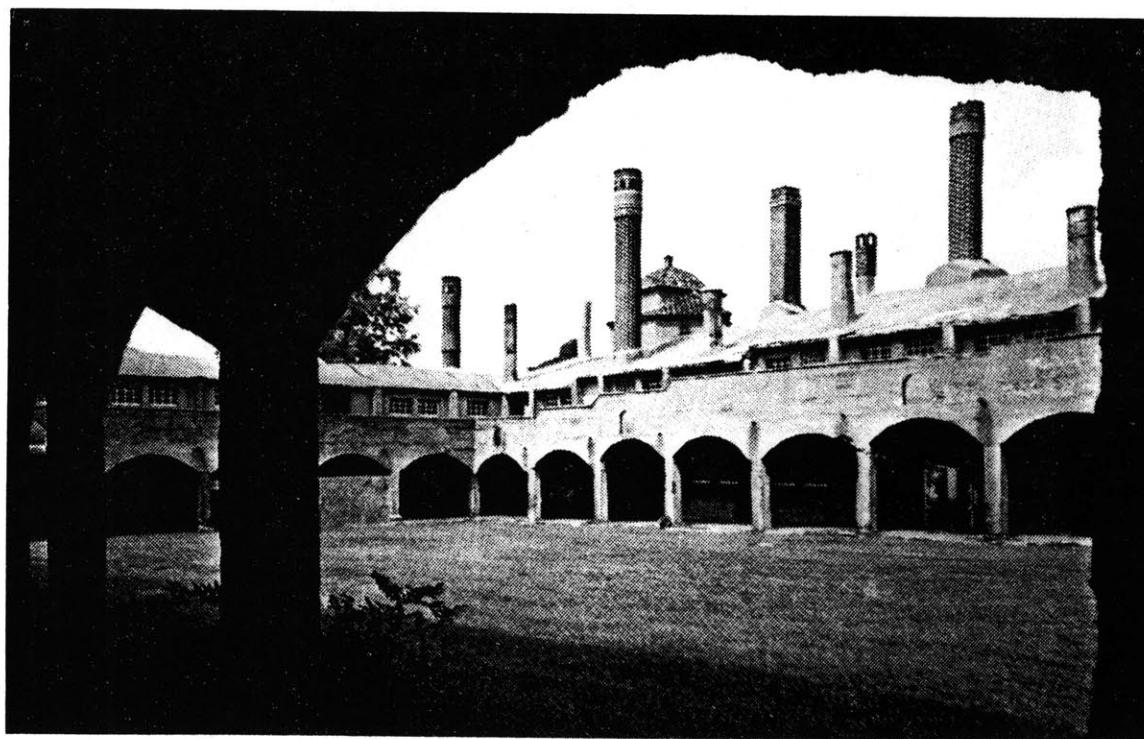


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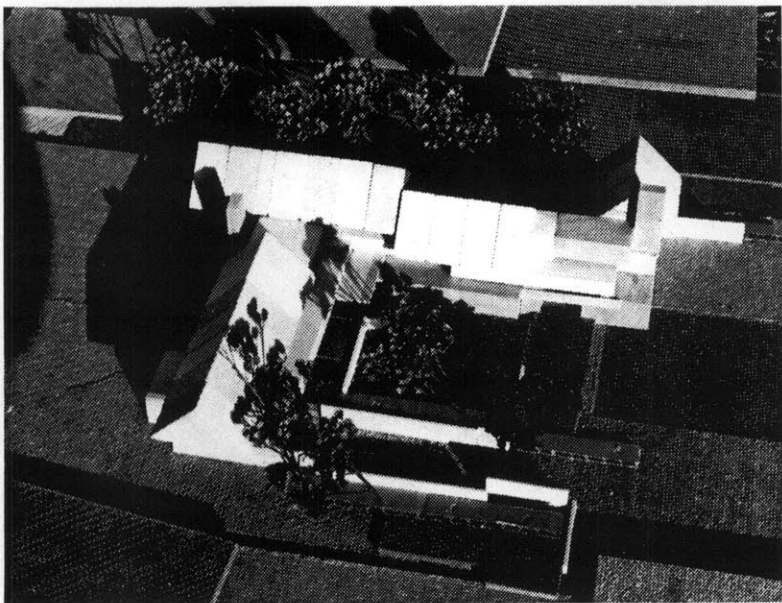
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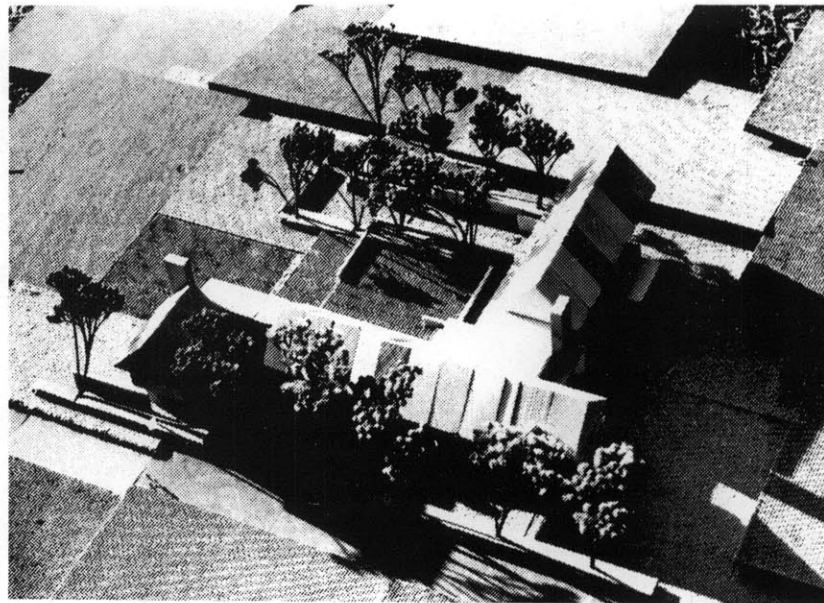
6, 7 ORGANIZATIONAL DIAGRAMS, showing relationship of various spaces to the garden and the street.

8 POSITIVE OUTDOOR SPACE, Moravian Tile Works, Doylestown, PA.

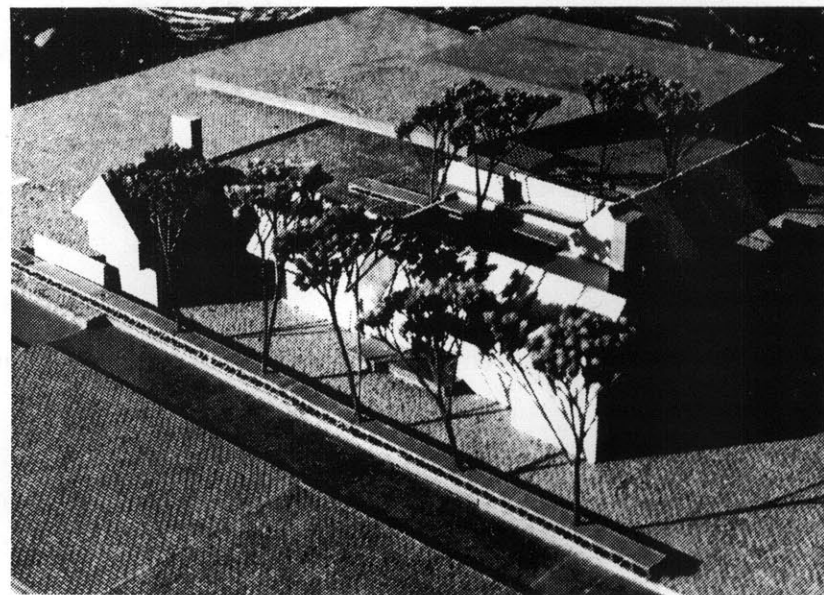




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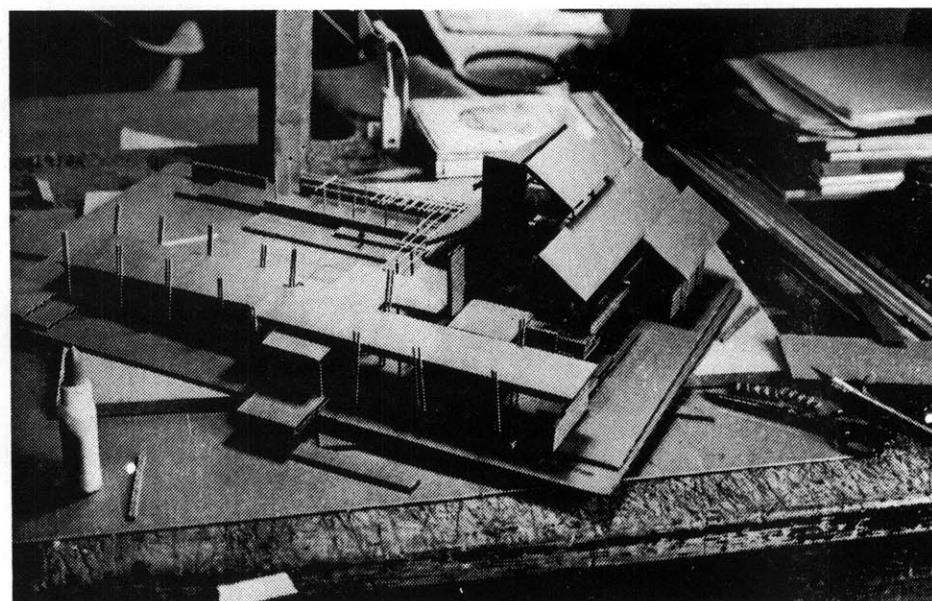
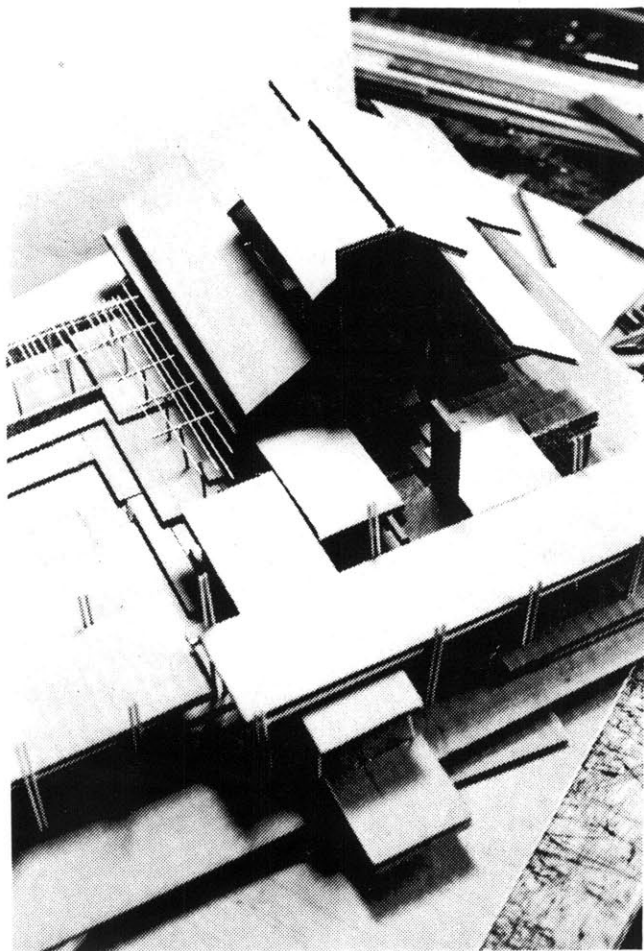
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9 10 11 STUDY MODEL, built at  $1/16'' = 1'$ .

12 13 14 STUDY MODEL, built at  $1/8'' = 1'$ .

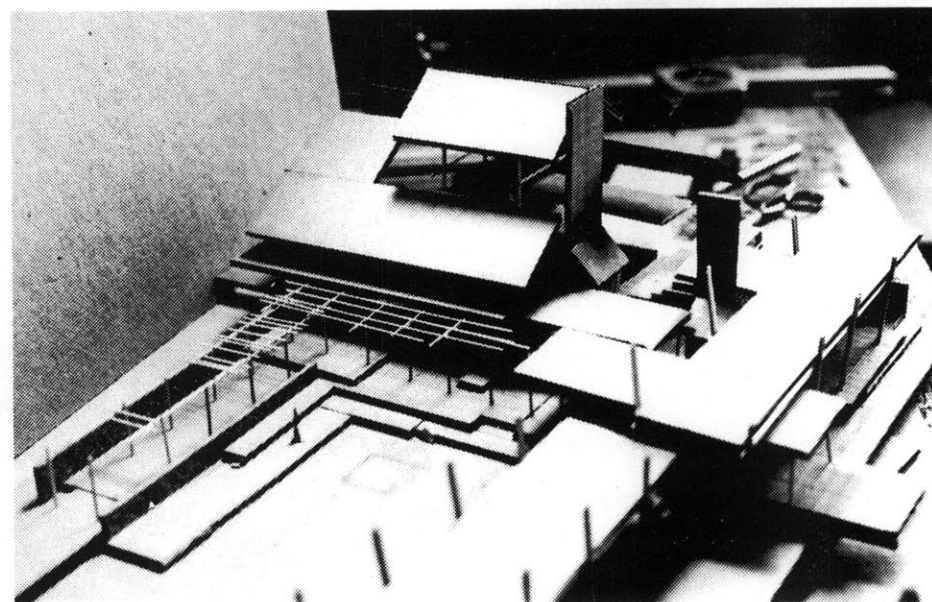


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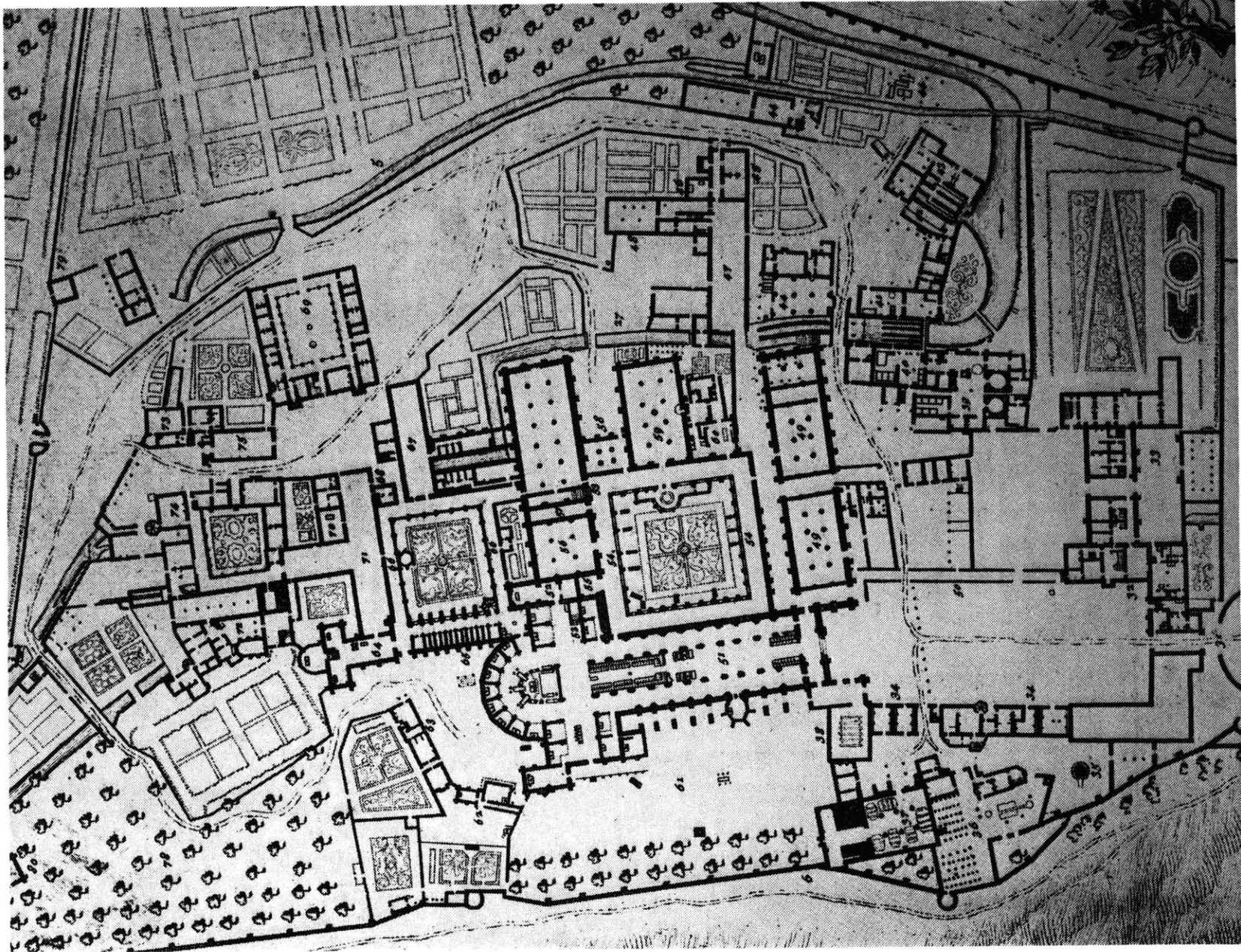
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## Organization and Orientation

Columns provide the structural and cognitive framework for the building. They are conceived of as trees and experientially extend the "grove" into the building. In approaching the building from the park or the court, a person walks beside and beneath the trees. This relationship is sustained at the entrance, where the columns take over the role of path definition and lead the person through to a point which overlooks the garden. From there, one may choose to move into the garden, around the garden, or turn and enter the actual enclosure of the building.

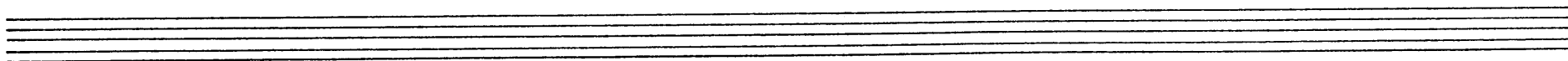
- 15 PLAN OF CISTERCIAN MONASTARY, at Clairvaux, 1708. The similarity between the spacing of the trees in the orchards and the sizes of the bays within the buildings produces a strong continuity between the indoors and outdoors.



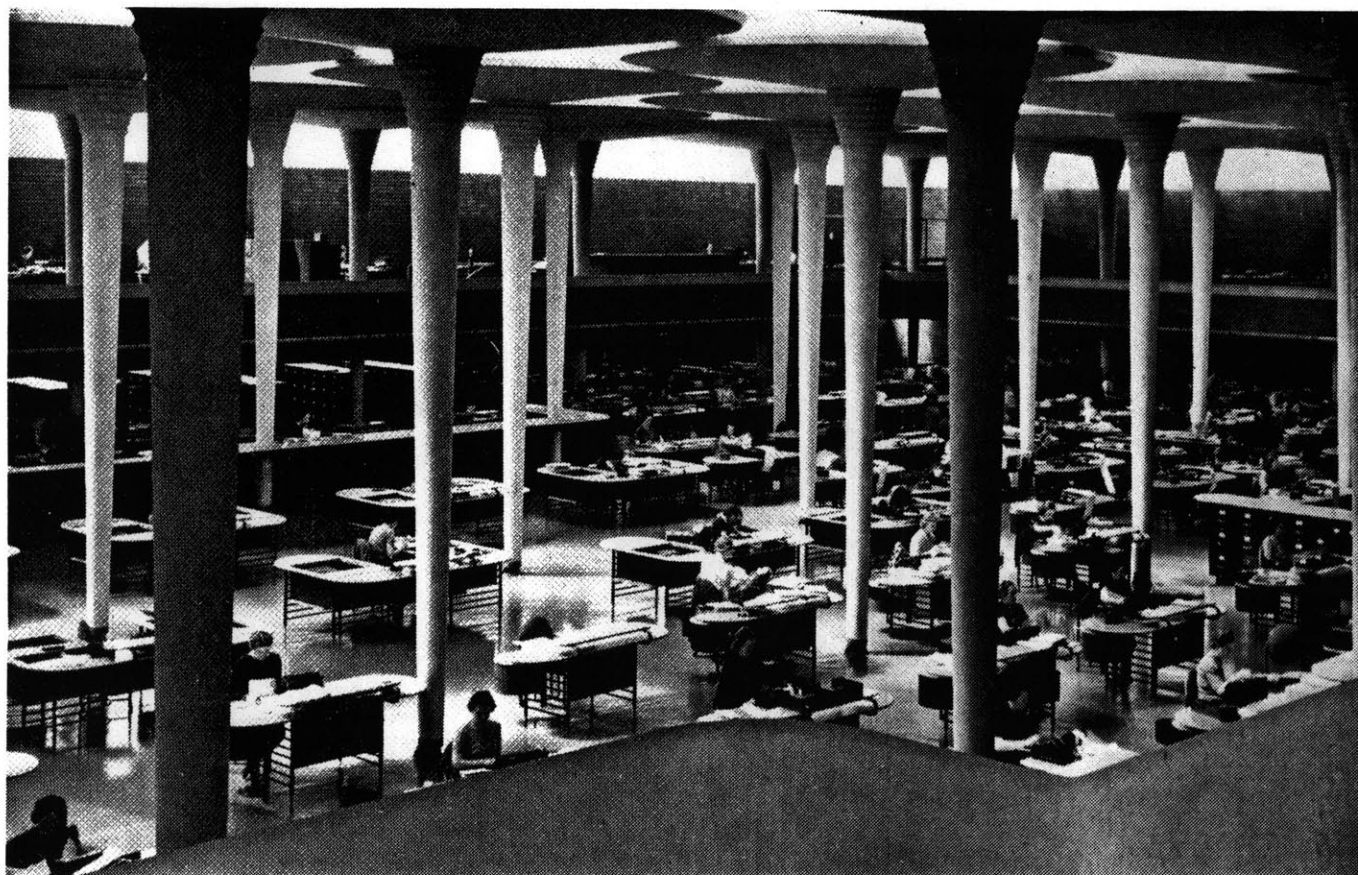


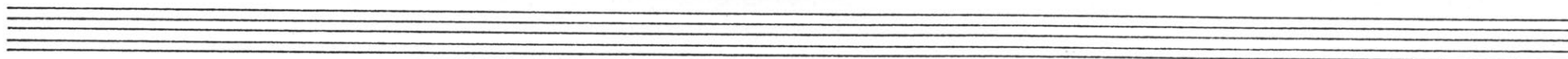
In the woods, the trees are the primary vertical element, and the ground is the primary horizontal. One moves between the trees as they reach up toward the sky, beneath a thick canopy of leaves. Sometimes trees are landmarks, and often they are used to support the various tents, flys and constructions which campers, of necessity and inclination, build. As soon as one has discovered the convenience of using two trees to support the ridge of a Baker tent, and later used the branches or saplings in the same role of support, or to erect a sail over a canoe to catch a convenient wind, it is an easy step in the imagination to believe that somehow trees have always been columns, tent poles and masts, and columns and masts will always, somehow, be trees.

- 16 TREES/COLUMNS, S. C. Johnson and Son, Inc., Administration Bldg.,  
F. L. Wright, 1936-1939.
- 17 TREES/COLUMNS, Sunday School, First Church of Christ, Scientist,  
Berkeley, Bernard Maybeck and Henry Gutterson, 1928.
- 18 SKETCH STUDIES, for columns.

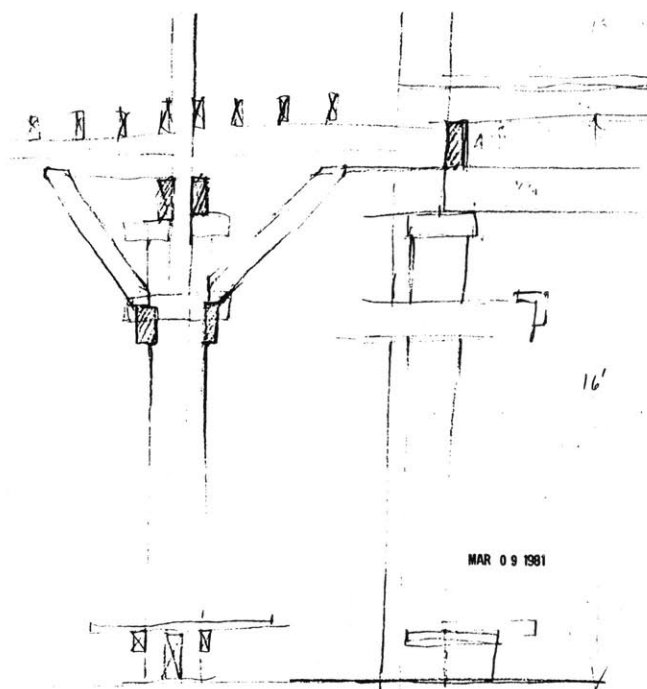
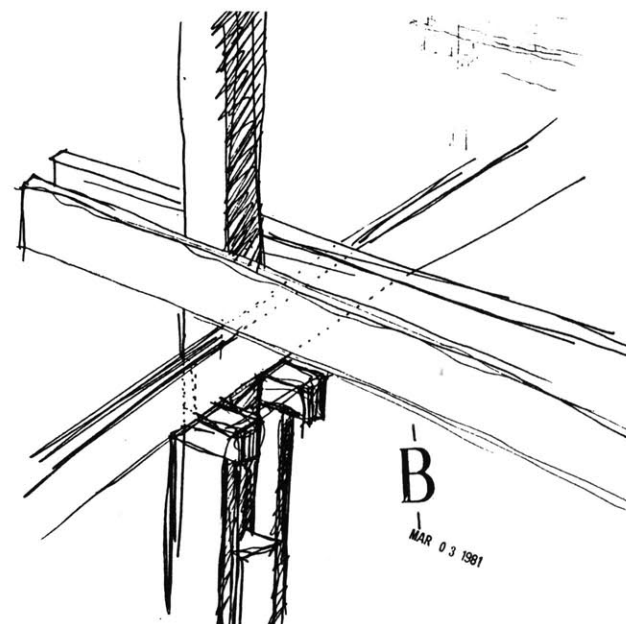
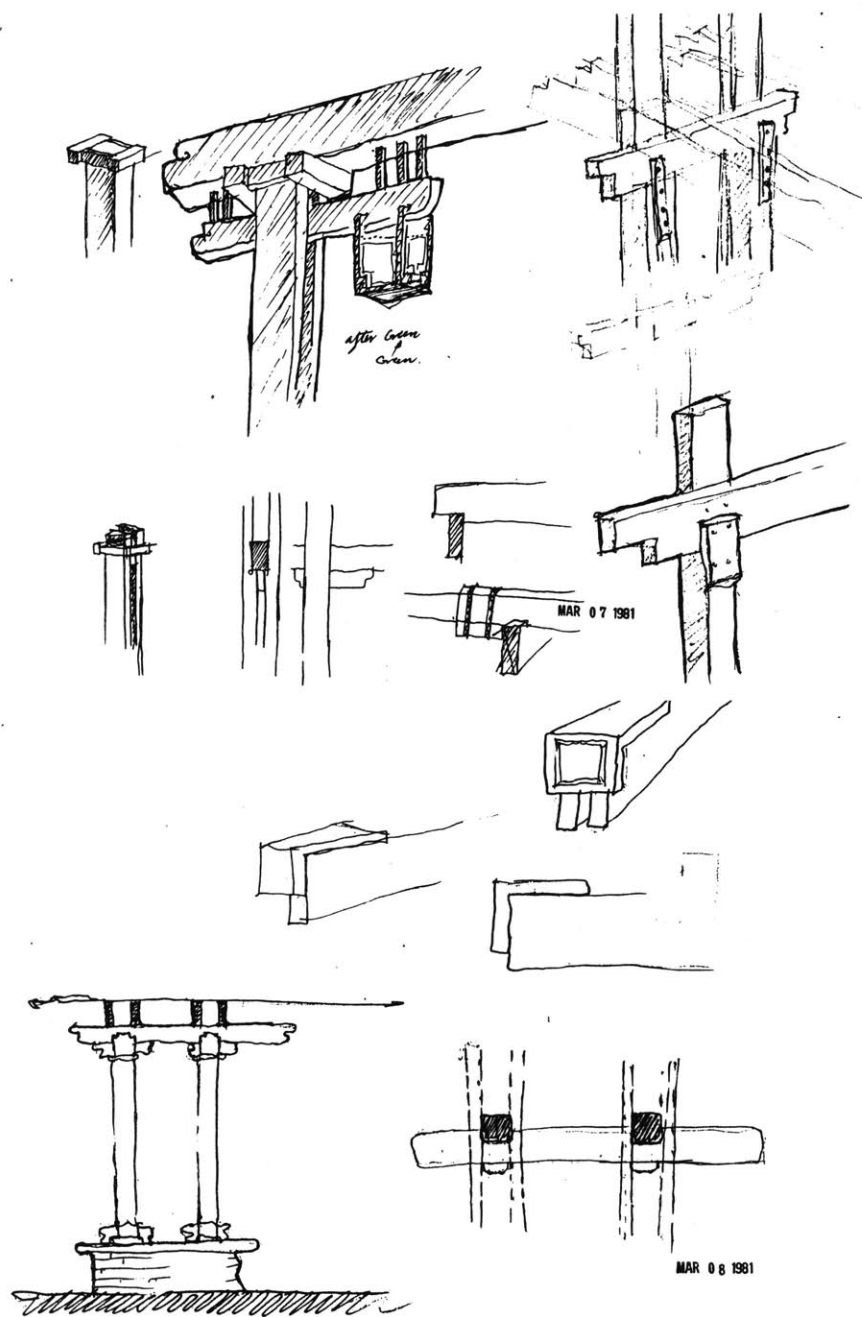


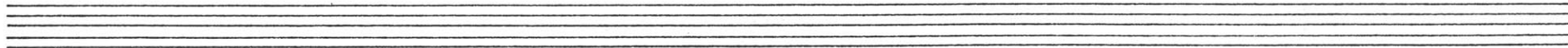






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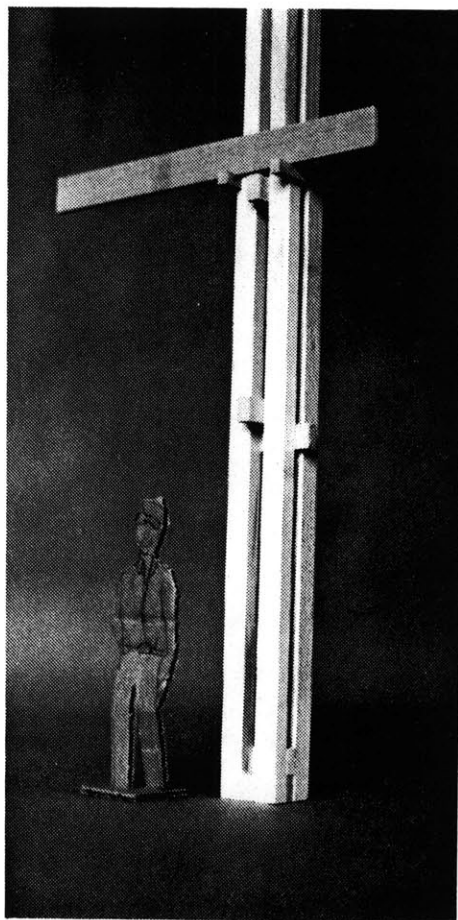




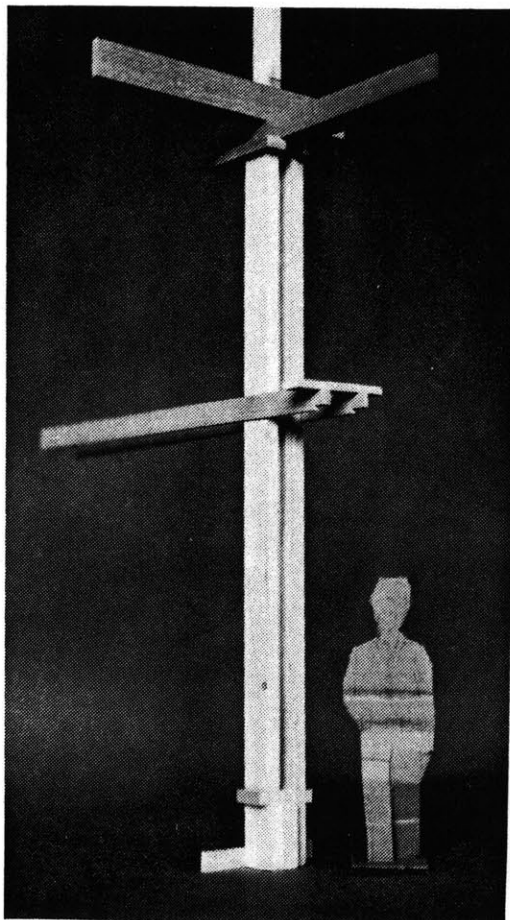
19 TREES/COLUMNS, Library, Glasgow School of Art, C. R. Mackintosh,  
1907-1909.

20 21 22 STUDY MODELS, at 1/2" scale for three column types. The tallest defines the clearing, the middle size, the "glade," and the double column defines the "arcade." The double column was later discarded in favor of a simpler single column.

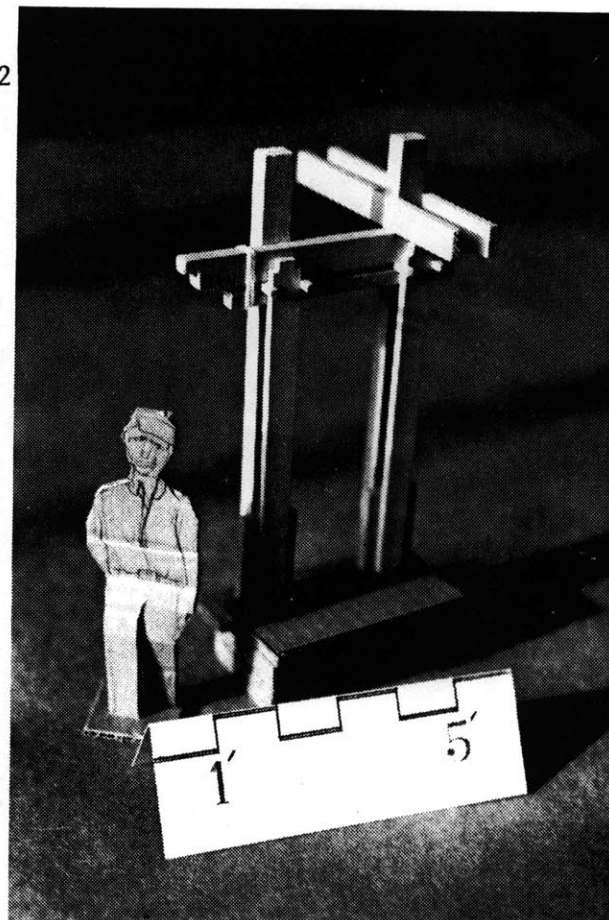
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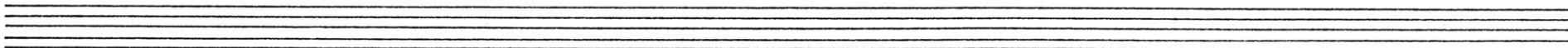
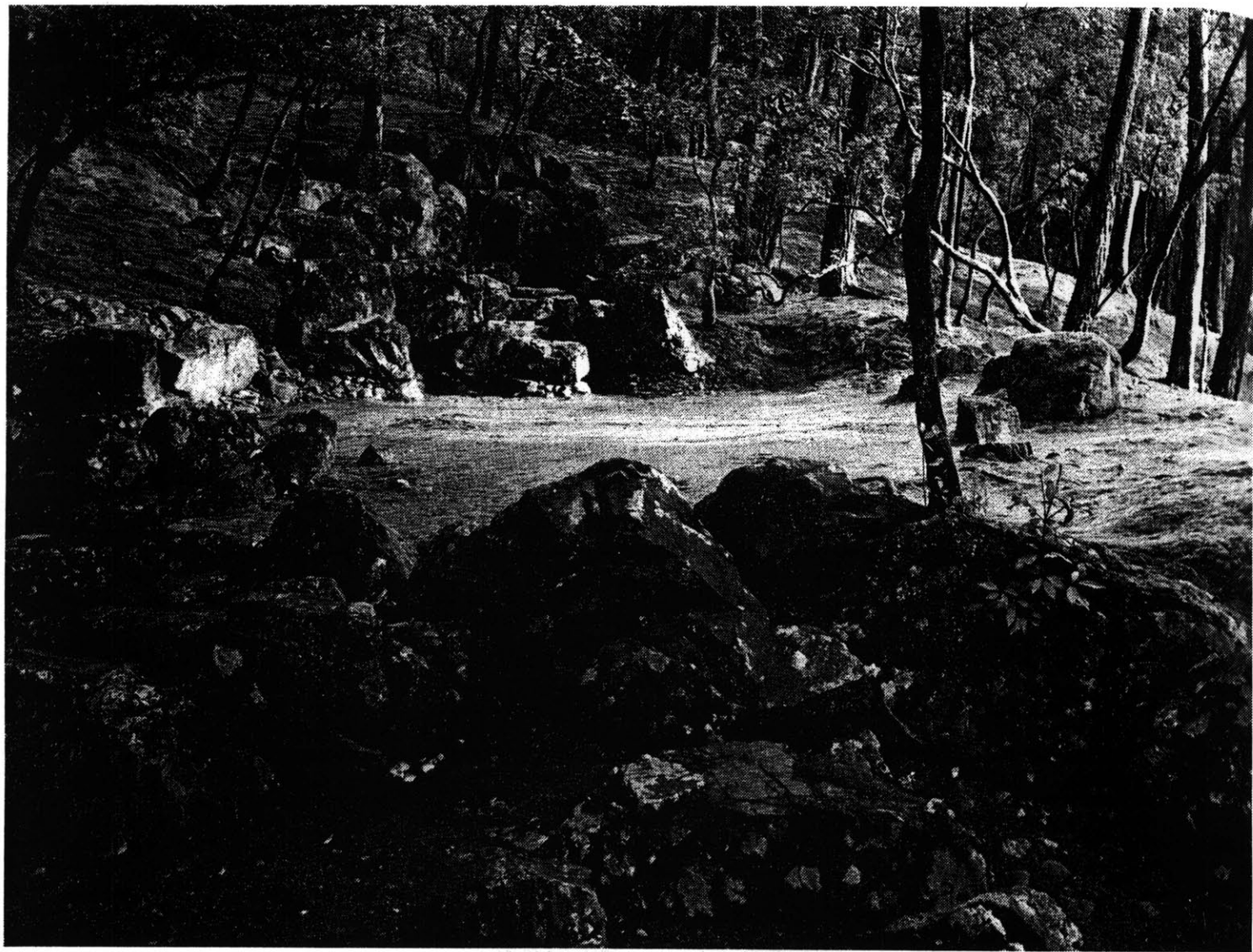


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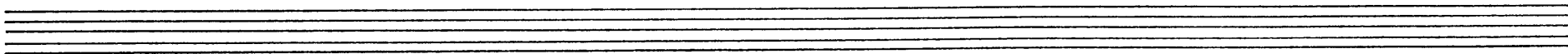


The building has three types of columns, each serving a particular purpose. The small directional columns of the 8' x 12' bay primarily indicate movement, and are arranged to form "arcades," similar to a tree-lined lane or promenade. Larger, square columns form a single square bay, 24' x 24', in the meeting house proper, stabilizing that space and creating "clearing." An intermediate sized column with a directional bay, 12' x 16', accommodates the social spaces and other functions as a sort of "glade." The real trees exist only outside the building envelope. The smallest columns are outside with the trees (supporting the western trellis), as well as inside. This overlap is a direct, literal continuity. Designing the columns as surrogate trees is a "compositional" continuity which reads clearly in the plan.

- 23 CLEARING, Upper Garden, Saiho-gi, Kyoto.
- 24 ARCADE OF TREES, "Pleached Walk."
- 25 GLADE, Olive Grove, S. Gregorio, Catanzaro.
- 26 BUILT CLEARING, main meeting room, Arch Street Meetinghouse, Philadelphia, PA.

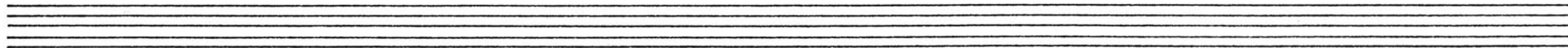


Light is a primary source of order and character in every landscape, and takes on particular qualities and meanings in the woods. While there is an infinite variety of light in the woods, it is possible to describe three conditions by which one orients oneself. First, in the thickest wood, light is diffuse and even. The forest canopy obscures the sky and the light seems to come from around, rather than above you. Most often this implies a density of growth which precludes most uses, and encourages movement through. Second, where the forest thins, because of a stream bed or soil conditions, there is a balance between the diffuse light and light from the sky. The lower density, in addition to admitting more light, accommodates a greater range of uses. One might move on through, or one might stop for lunch, or set up camp. The third condition, the clearing, may be the result of a rock formation or an ancient pond which has long since disappeared. The canopy opens up; there is a broad, though not necessarily flat, area unbroken by tree trunks, and bathed in light from above. These places are ideal for collective activity, meetings, campfires, games. These three light conditions, diffuse, or "side" balanced, and direct, correspond to the three column-bay types, which I have described as arcade, glade and clearing.











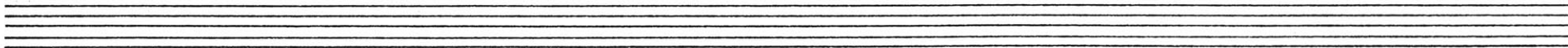


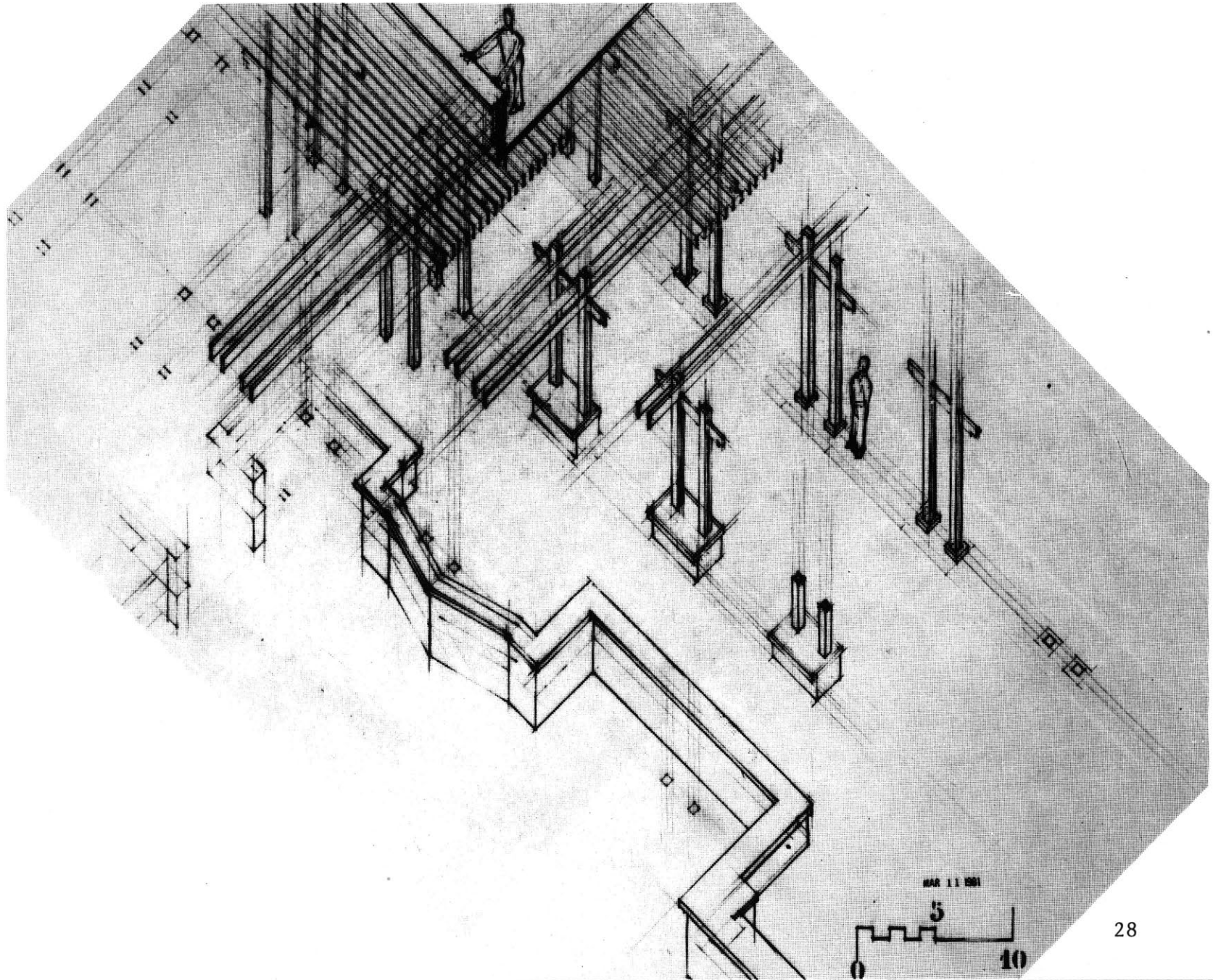


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27 BUILT ARCADE, the Stoa of Attalos, Athens.

28 AXONOMETRIC STUDY. This arcade is on the southern edge of the meeting-house proper. Here the terracing steps down into the garden.









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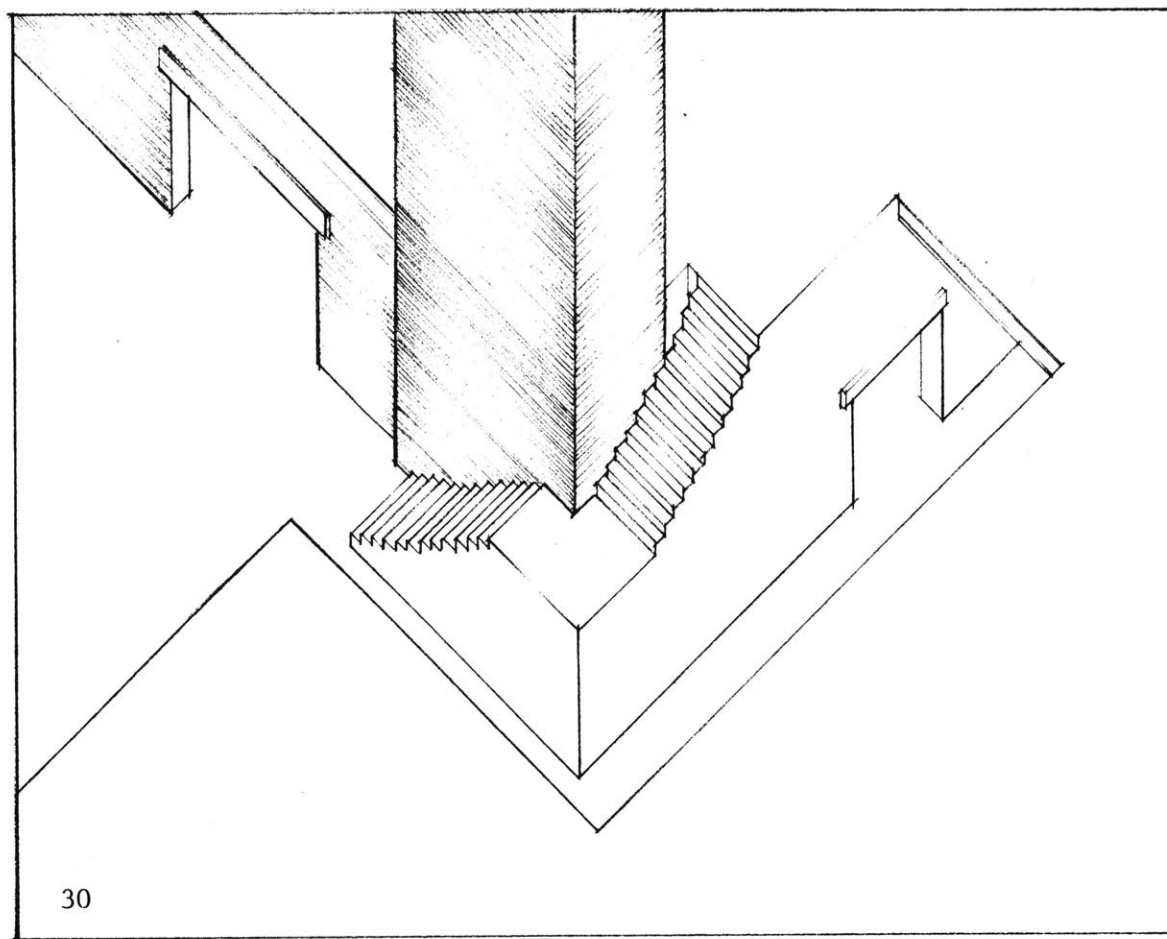
One of the most powerful means of orientation in any environment is to get up high and overlook the surrounding area--the higher and more unrestricted the view, the better. This is why people enjoy going to the tops of tall buildings, climbing trees, and climbing mountains. Great Pond Mountain near East Orland, Maine, is a fine example. One climbs steadily between the trees to a point at the base of a rock ledge. As you climb steeply along the side of the ledge, you emerge, with the rock, at a point above the treetops. From this vantage point, you can look back down on Craig Pond, where you began your hike, and across the pond to Echo Rock, where friends are swimming and diving. Due south is Mason Mountain, where you picked blueberries the week before. Places which you previously experienced individually are now seen as parts within a larger whole. Spatially and temporally, you have a sense of where you are. High points have the additional merit of orienting people at their base, if there is a clear transition from the horizontal to the vertical.

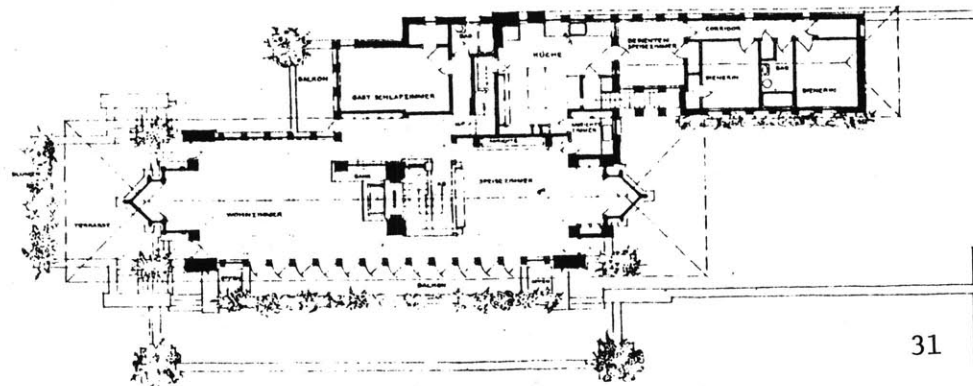
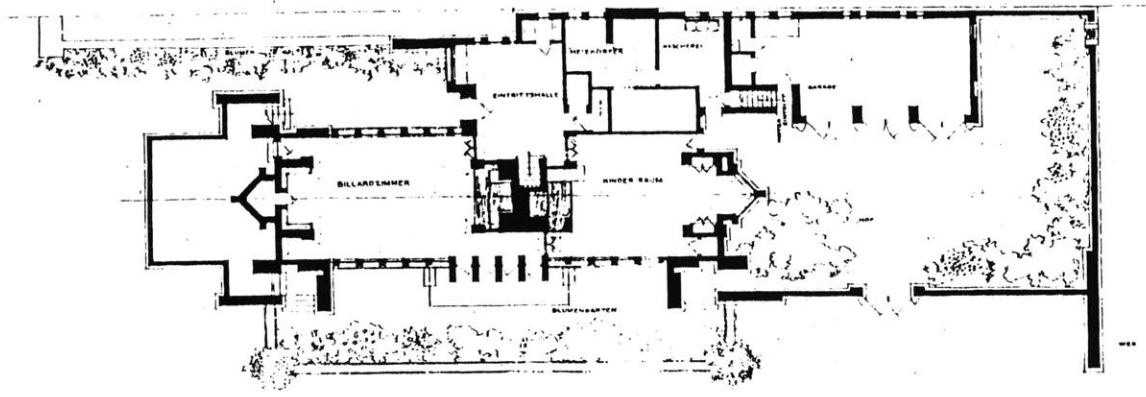




29      ORIENTATION BY OVERLOOK, the view from Great Pond Mountain. The body of water in the upper right is Craig Pond. Mason Mountain is out of camera range to the right.

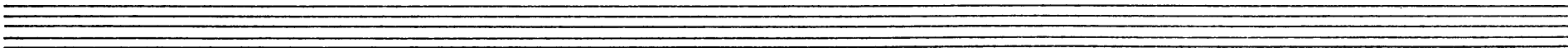
In the meeting house, the central hearth and chimney form a similar vertical continuity. The masonry is a stable mass around which the circulation flows. The stairs climb alongside the masonry into a skylit place which overlooks the entry and has views out into the garden.

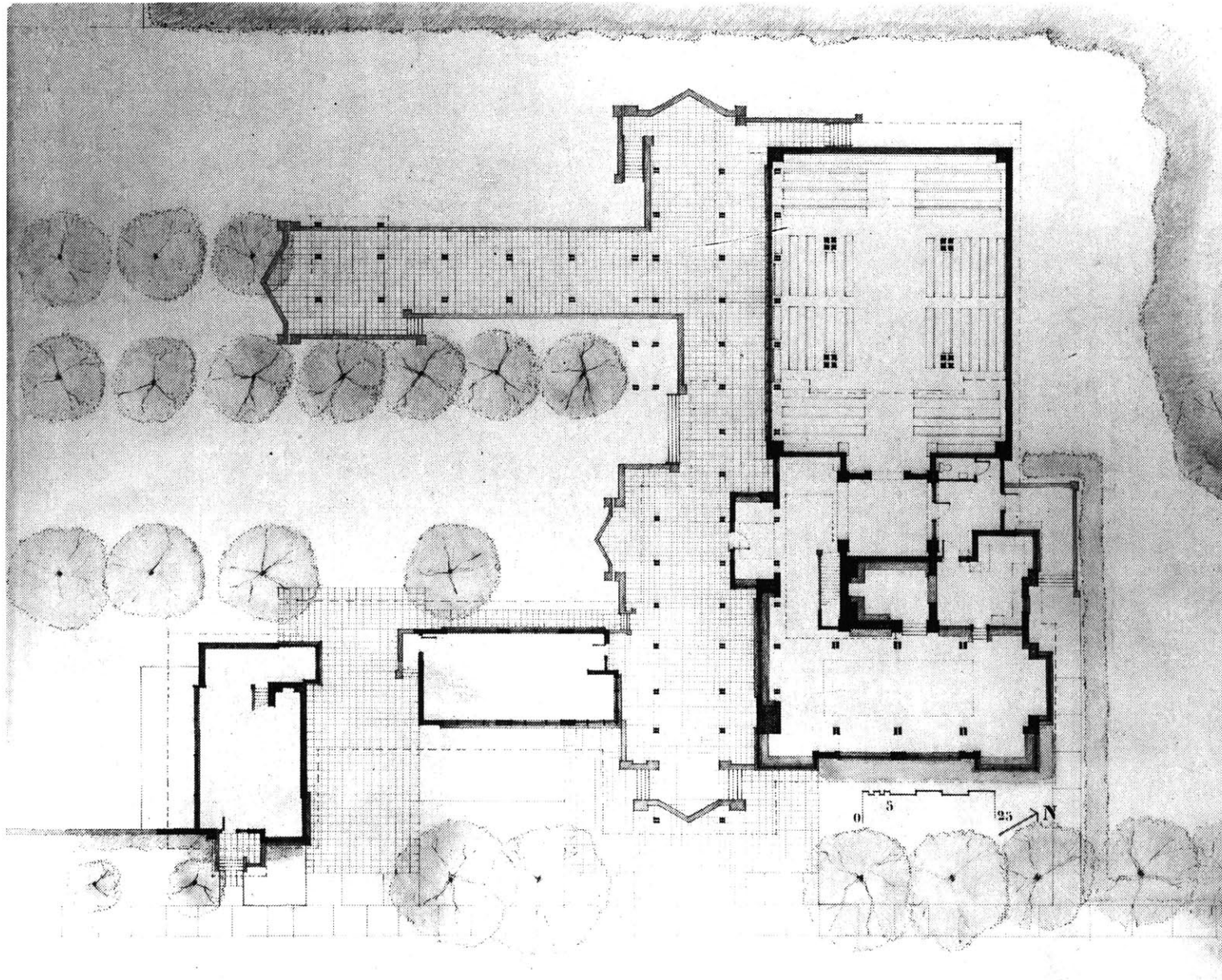




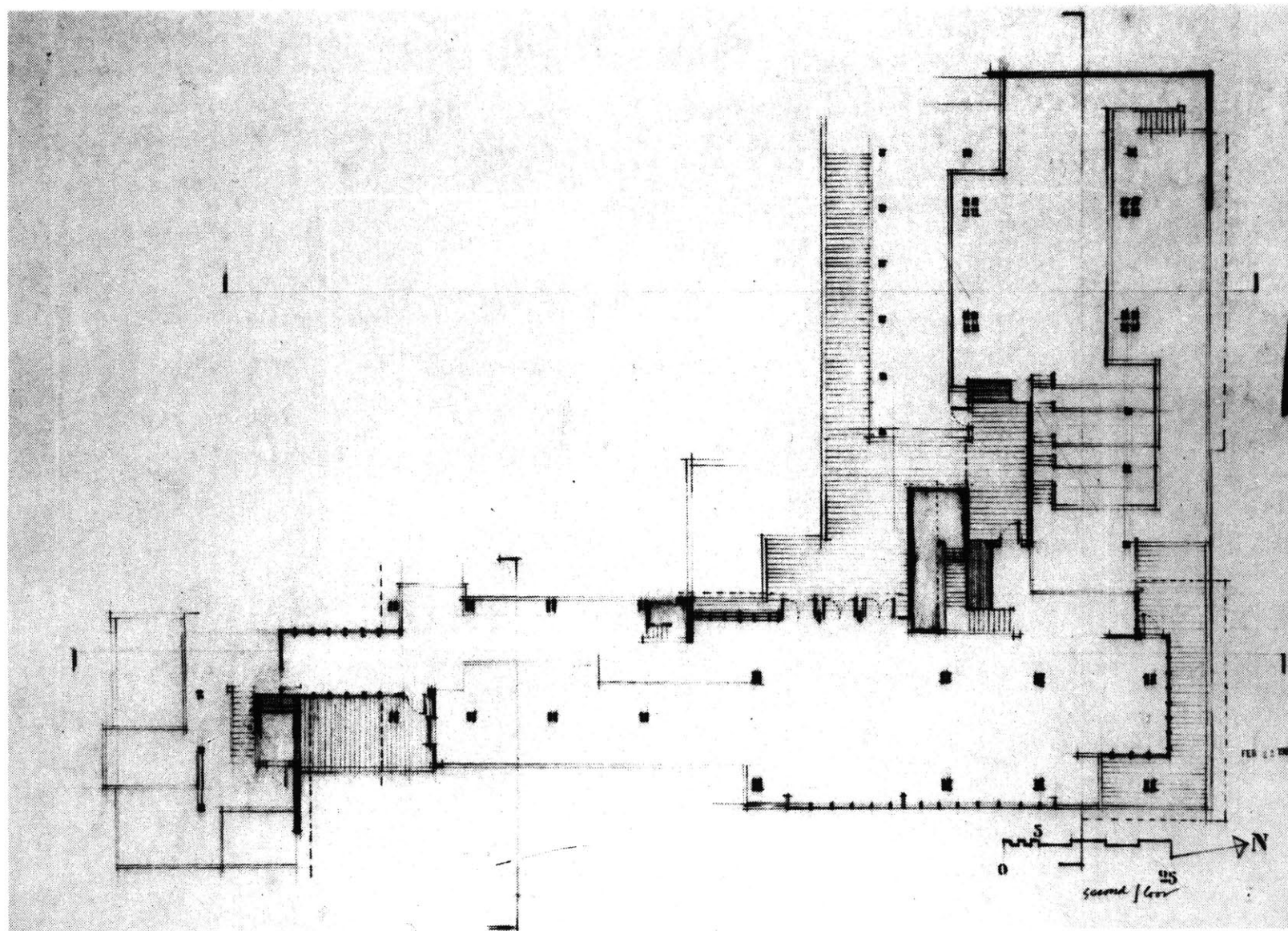
- 30 HEARTH AS MOUNTAIN. Diagram of movement up around the masonry core.
- 31 HEARTH AS MOUNTAIN, plan, Robie House, F. L. Wright, 1909. The hearth and masonry core form a rock, around which other uses are organized.

- 32 PLAN, dated May 25, drawn at  $1/8'' = 1'$ . Main level.
- 33 EARLY PLAN STUDY, dated February 22, drawn at  $1/8'' = 1'$ . Second floor.
- 34 PLAN, dated February 22, drawn at  $1/8'' = 1'$ . Main level.
- 35 MAYBECK'S CHRISTIAN SCIENCE CHURCH, sketch studies.
- 36 SECTION STUDY THROUGH MAIN MEETING SPACE and showing pergola reaching out to the south. Drawn at  $1/8'' = 1'$ .
- 37 PLAN, dated February 26, drawn at  $1/8'' = 1'$ . Main level.
- 38 SECTION STUDY RUNNING EAST WEST, facing south through main meeting space on right and social space on left, drawn at  $1/8'' = 1'$ .

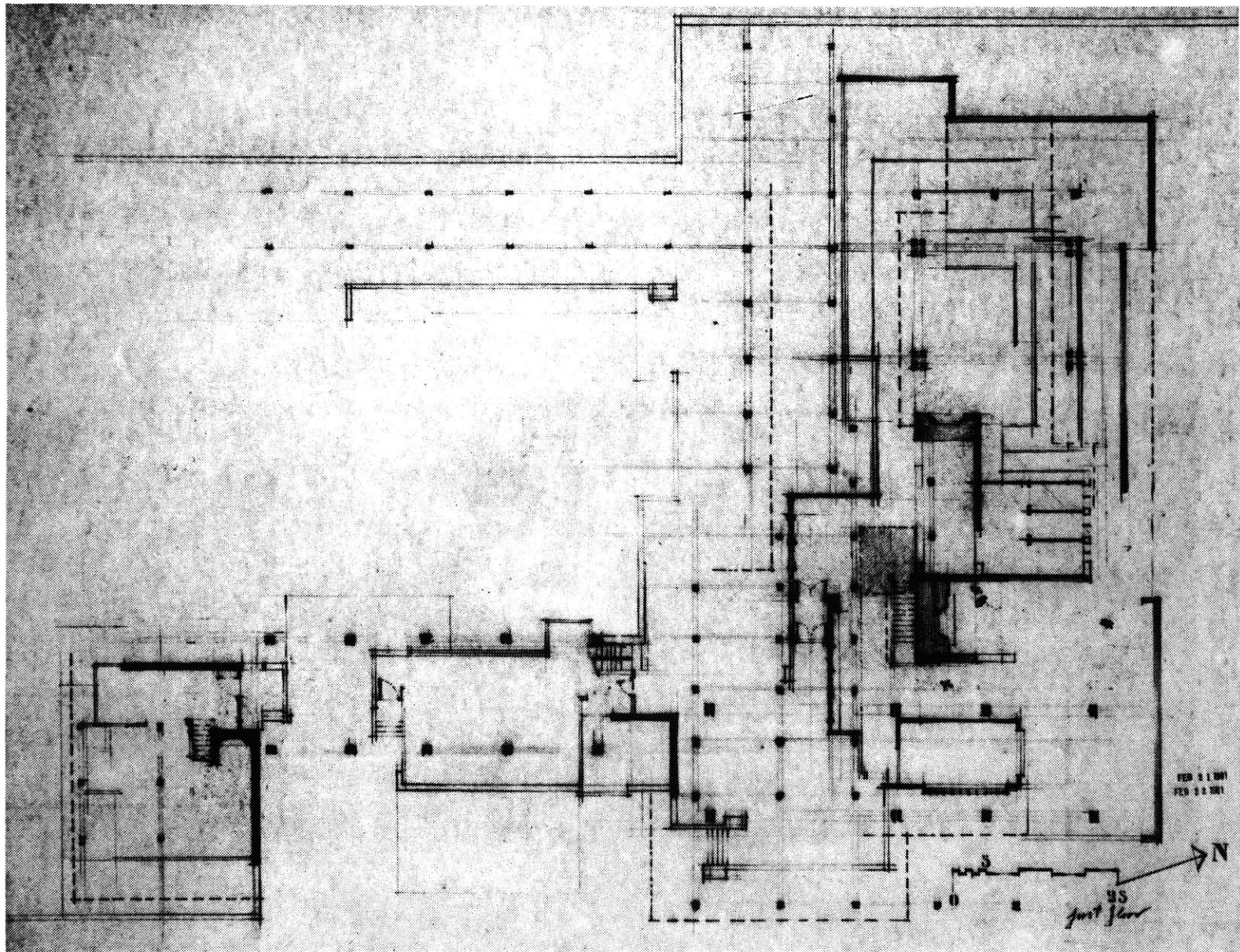


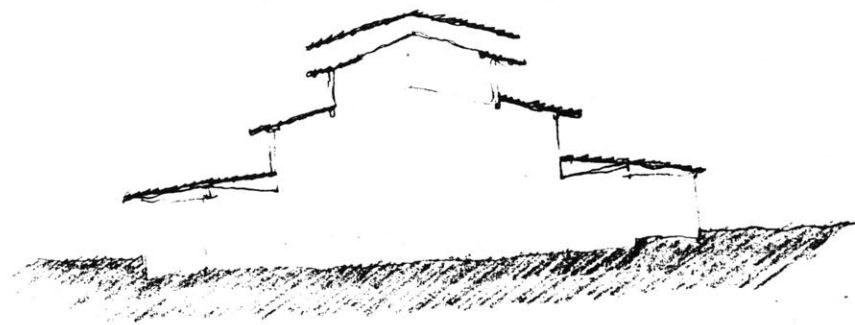








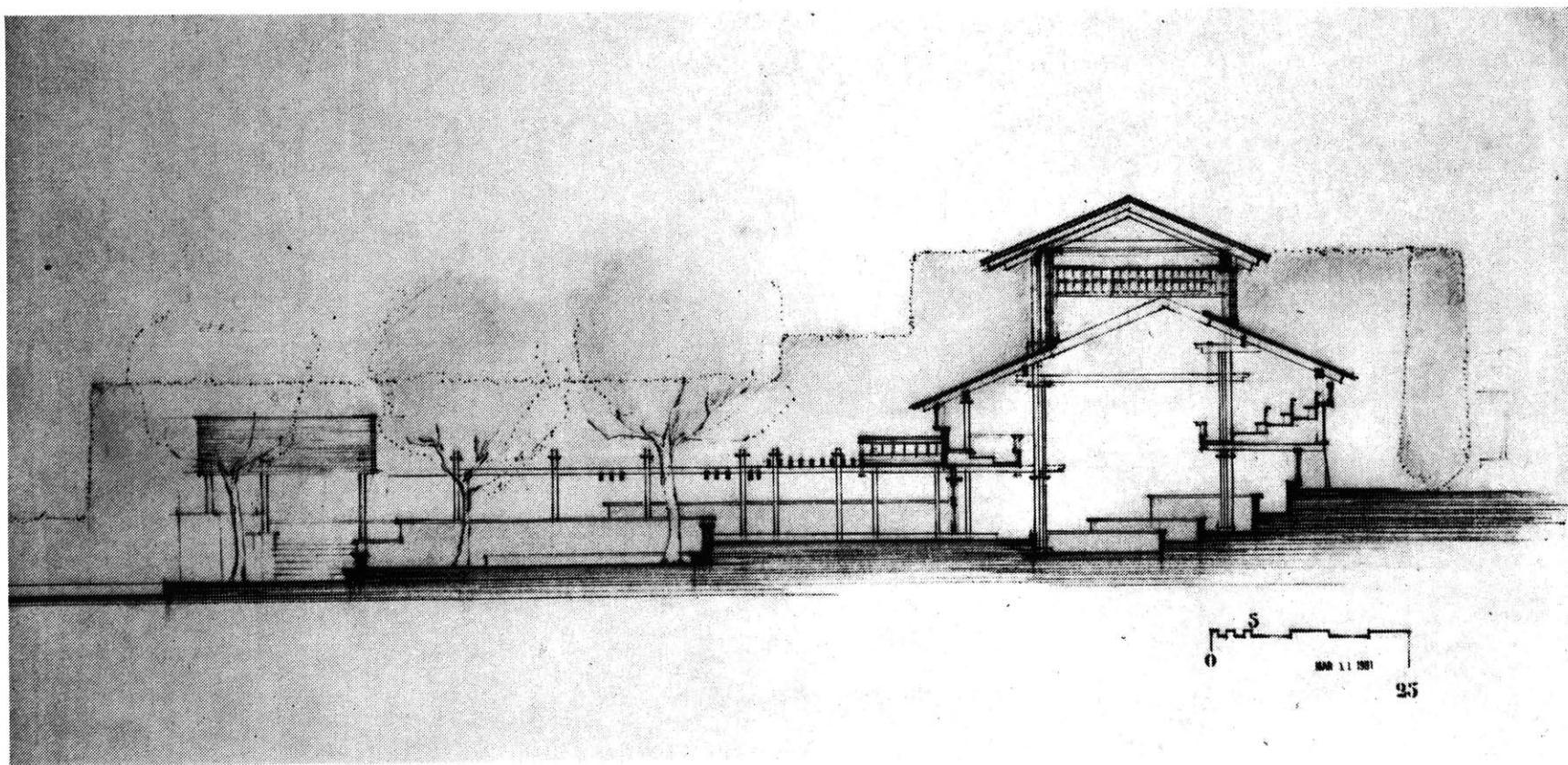




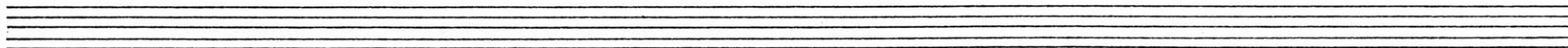
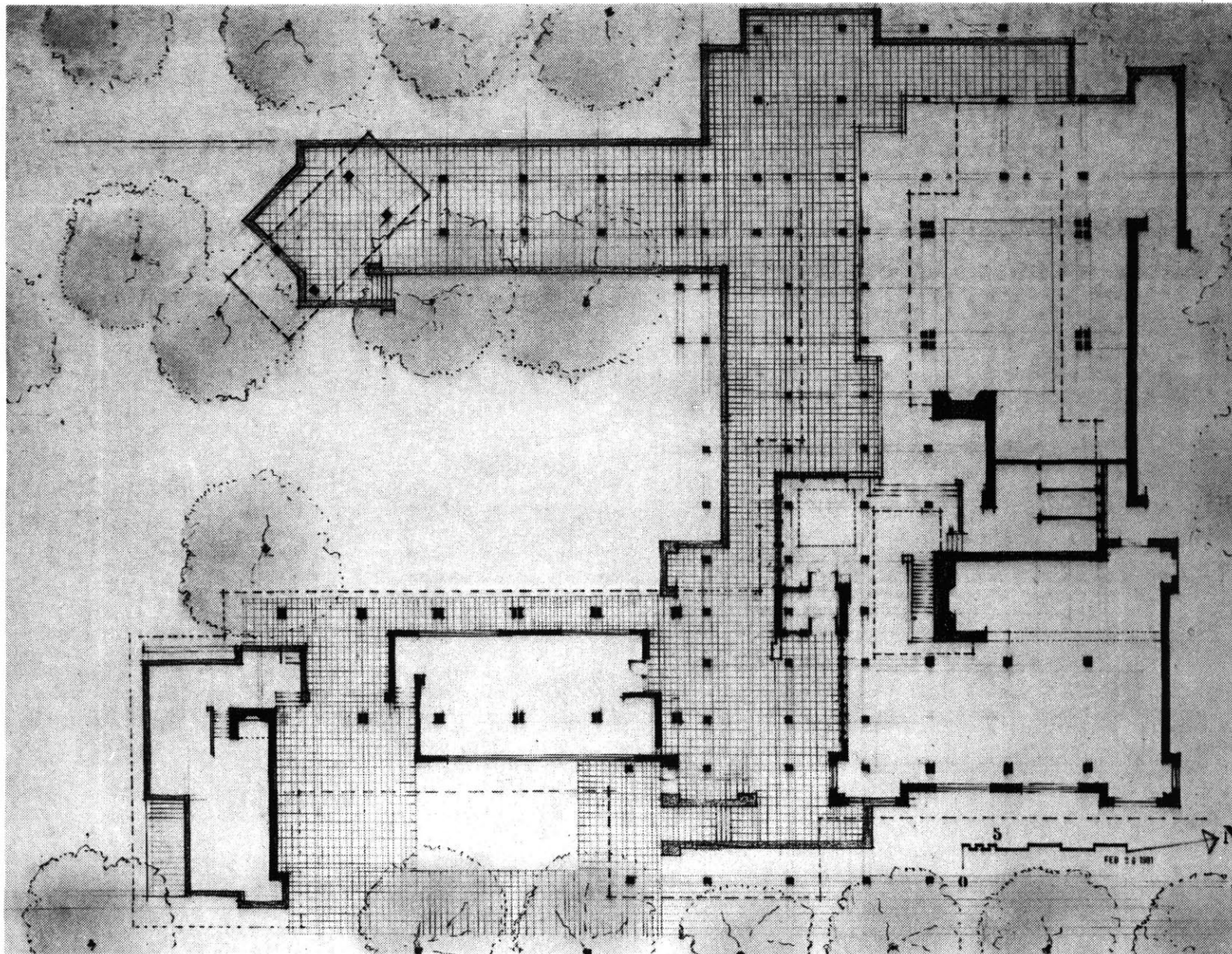
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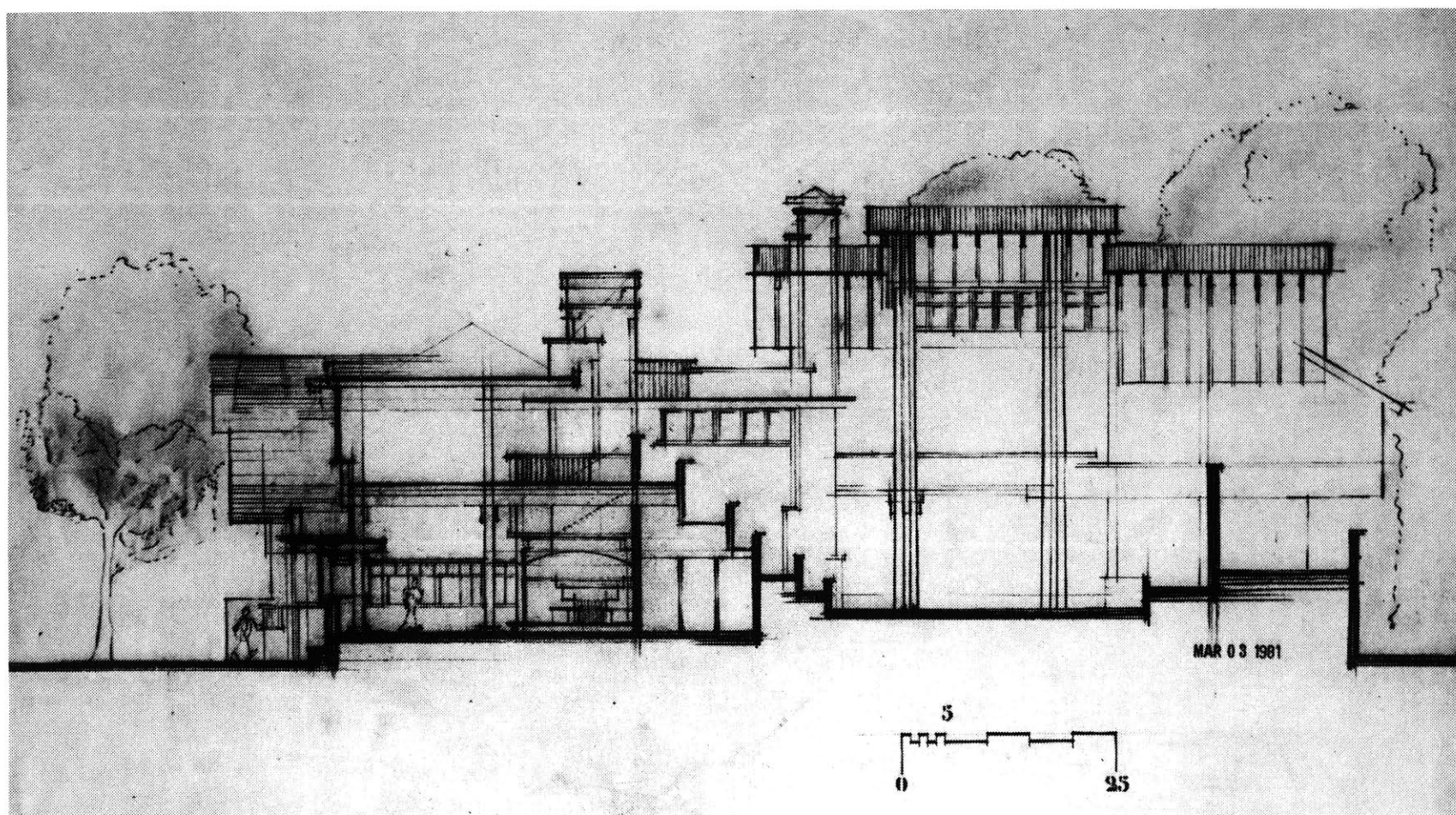
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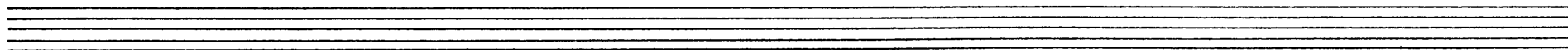




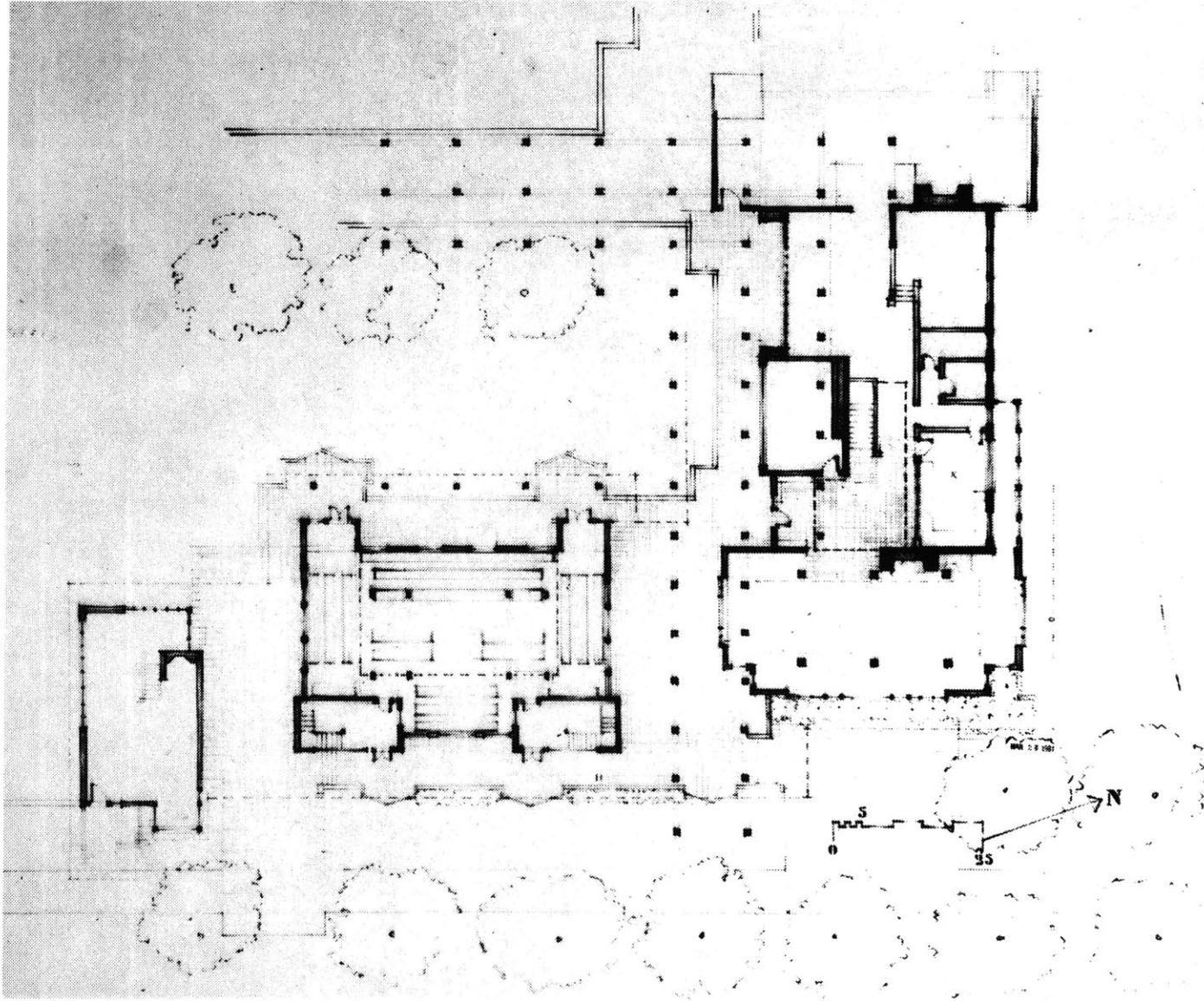


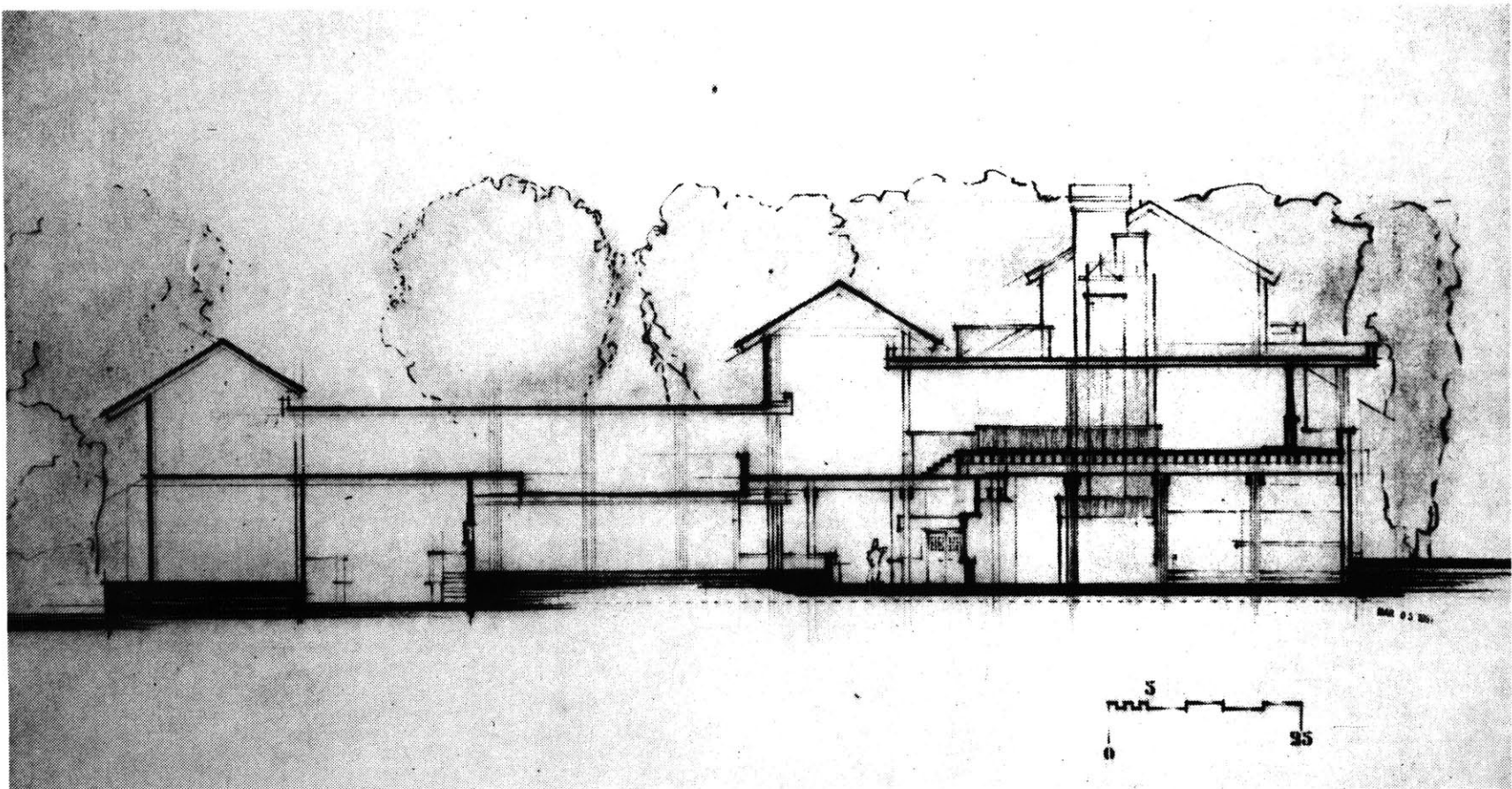


- 39 PLAN, ALTERNATIVE SCHEME, which places the meeting house proper between street and garden, drawn at  $1/8'' = 1'$ .
- 40 SECTION, RUNNING NORTH SOUTH, caretaker's house on far left, library on second floor middle, with Sunday School rooms below. Social spaces on right, drawn at  $1/8'' = 1'$ .
- 41 STUDY, ELEVATION TO LONGFELLOW COURT, drawn at  $1/8'' = 1'$ .
- 42 SECTION, RUNNING WEST EAST, facing north through main meeting room on left and social space on right, drawn at  $1/8'' = 1'$ .
- 43 ELEVATION AND PARTIAL SECTION, through Firstday School, library and garden, facing north, drawn at  $1/8'' = 1'$ .
- 44 45 46 PLAN AND SECTION STUDIES, drawn at  $1/8'' = 1'$ .
- 47 FARMHOUSE AND BARN, in Denmark.

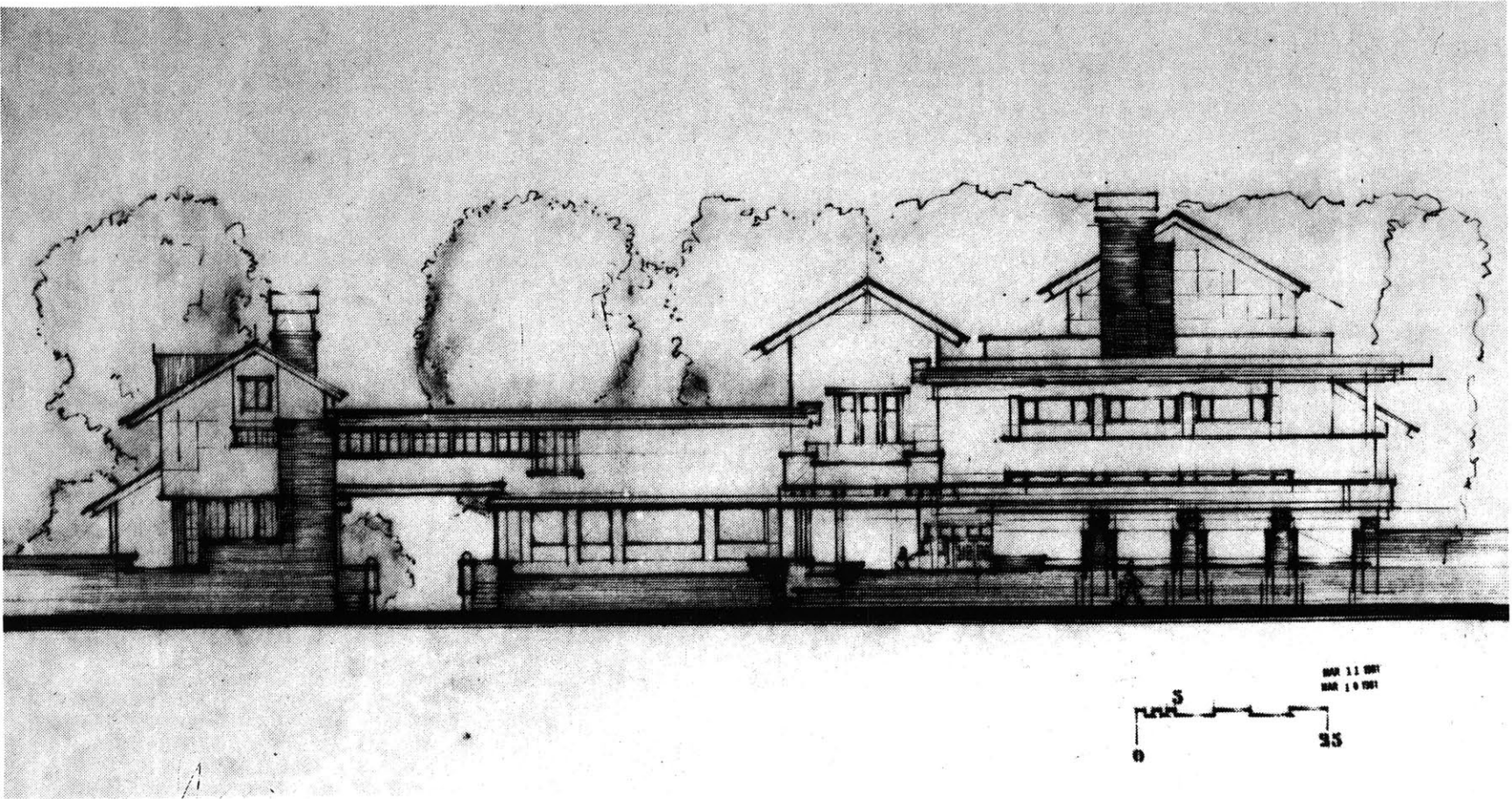




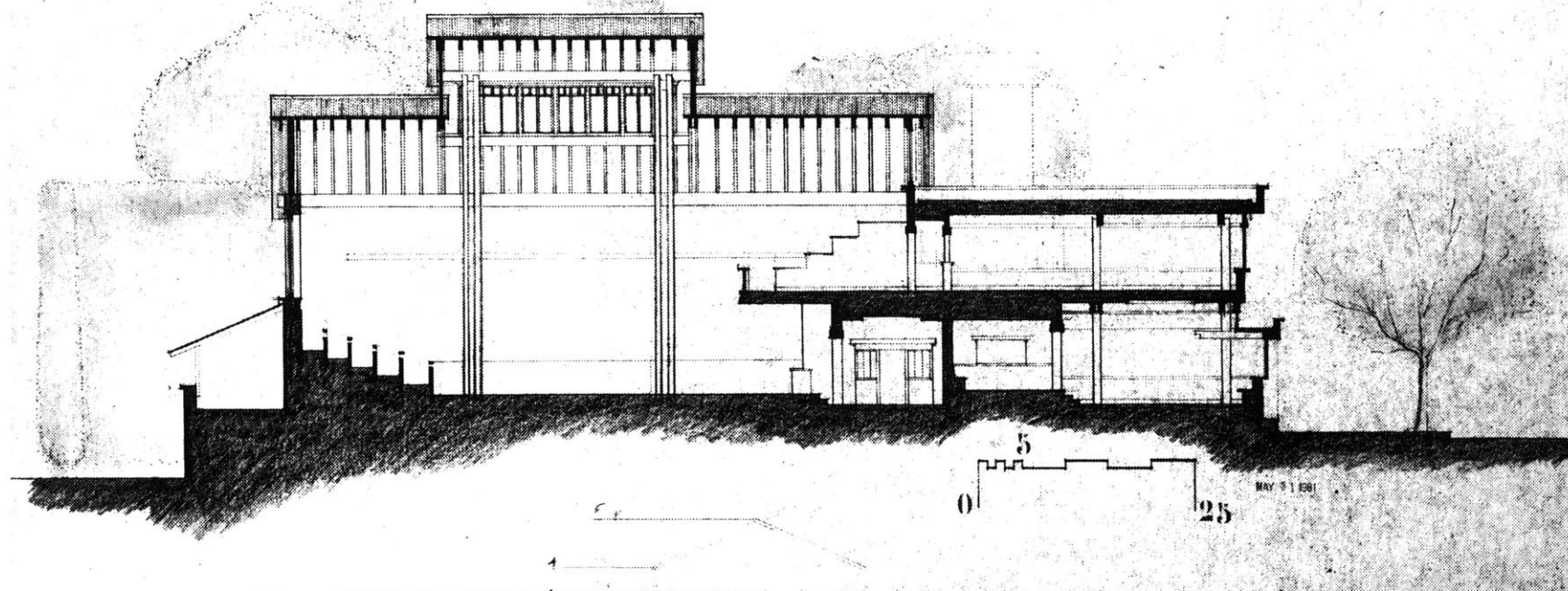




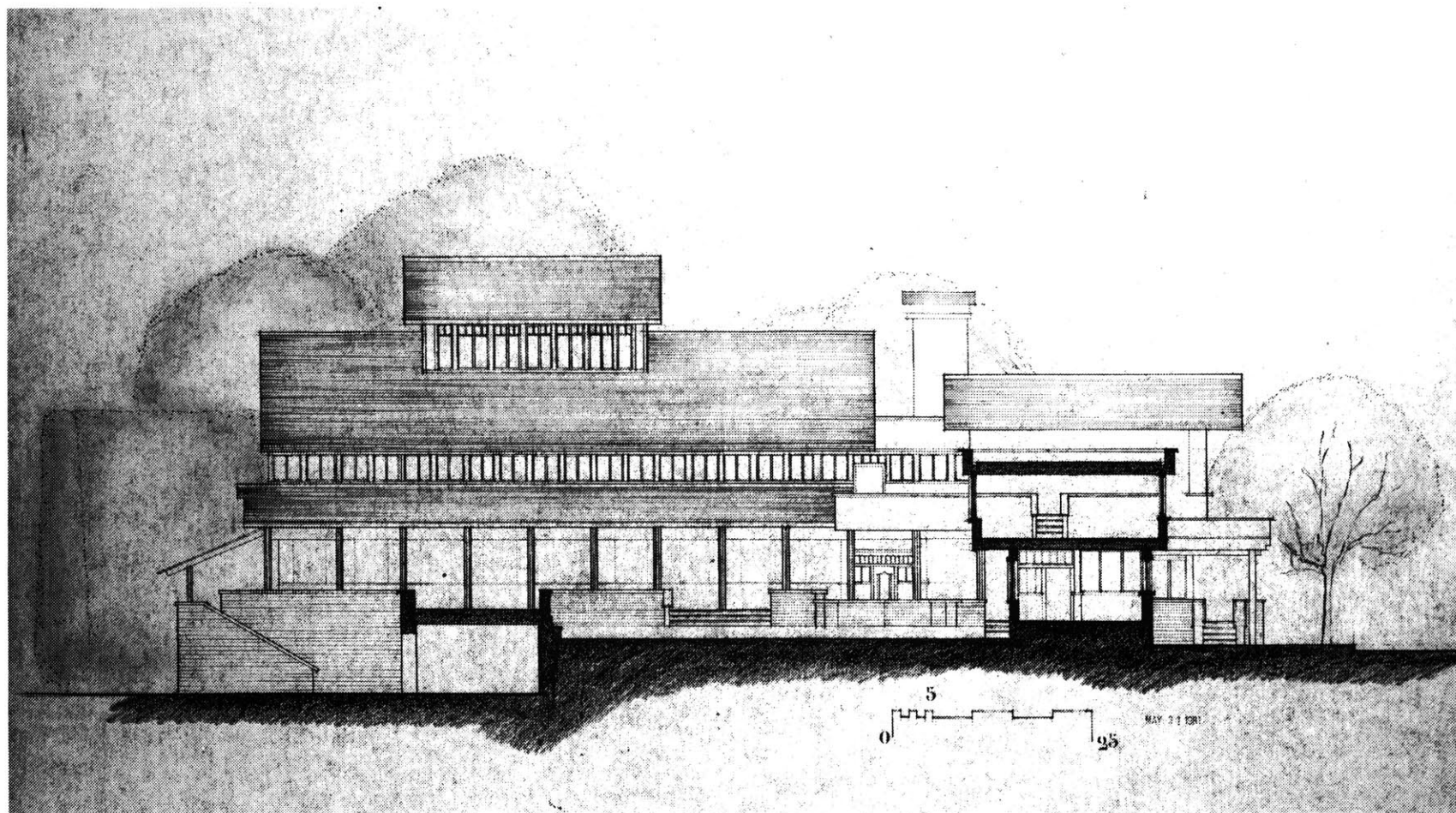
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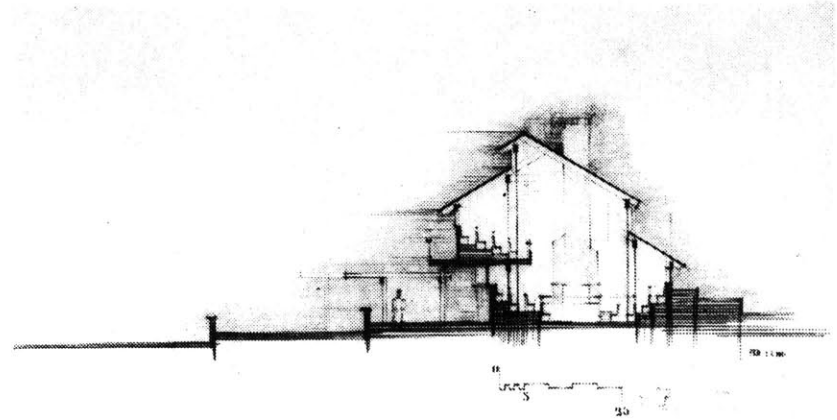
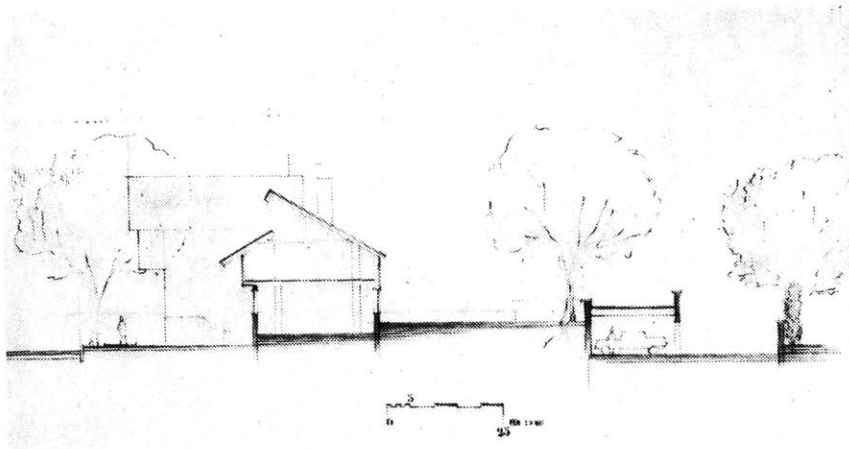
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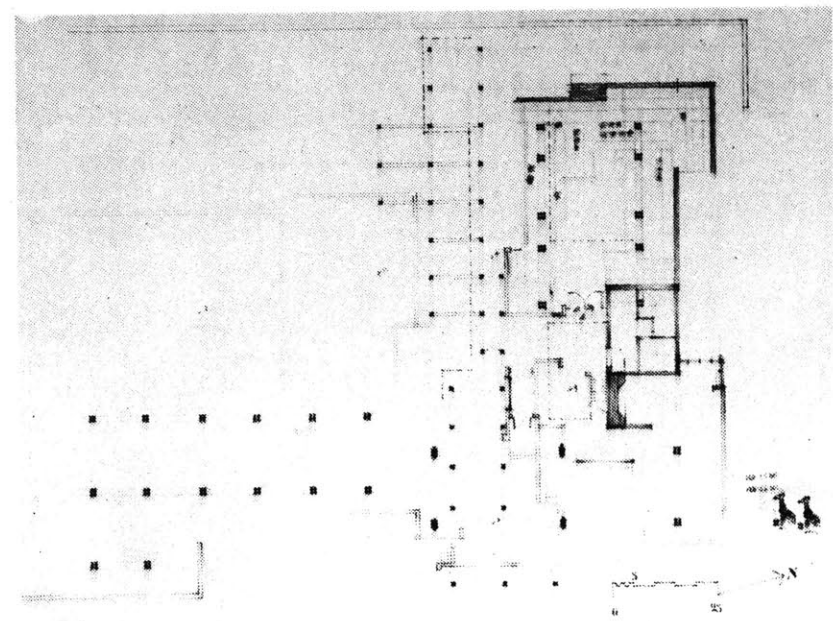
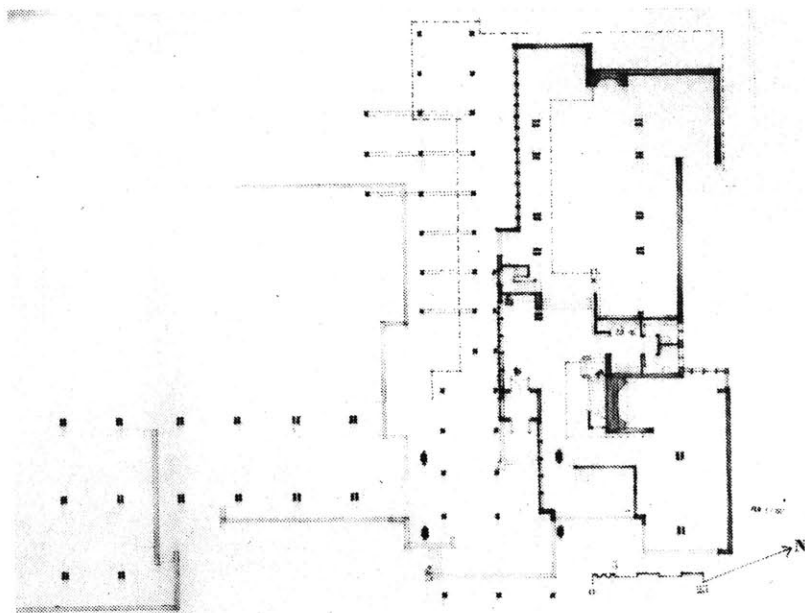




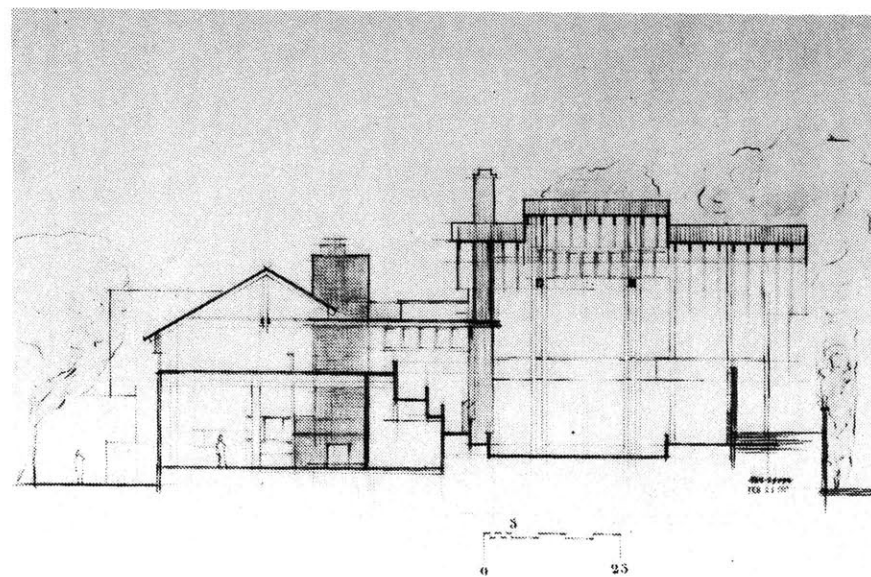
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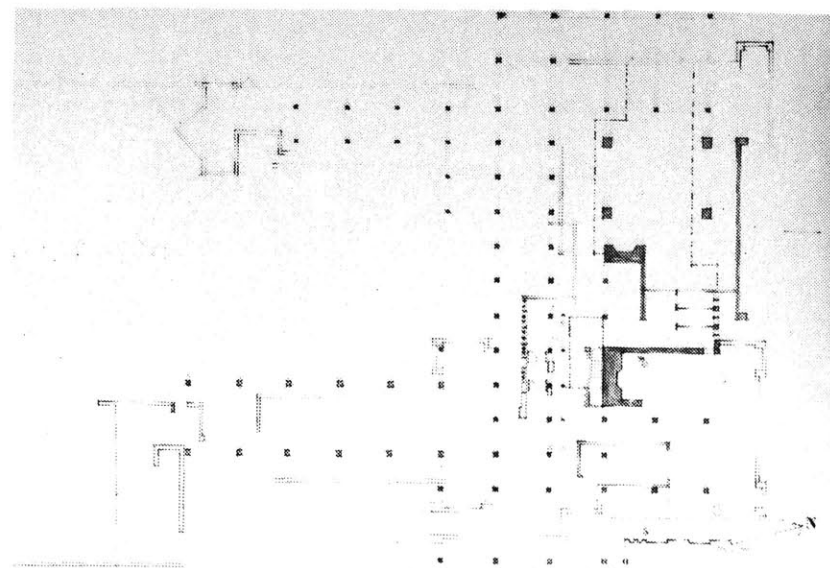
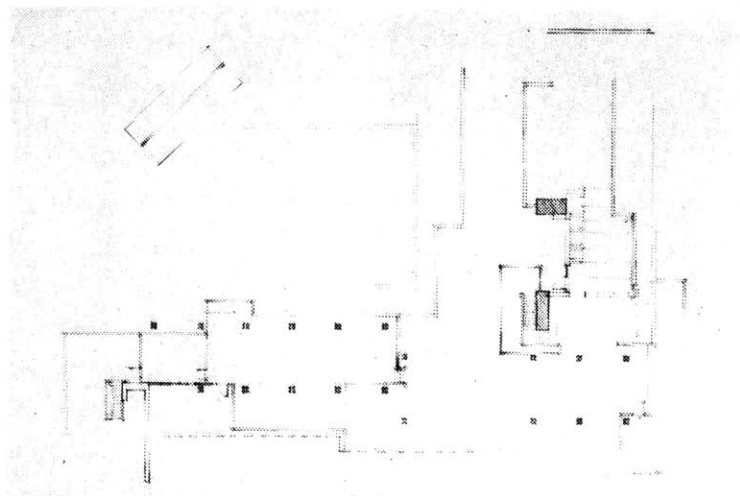
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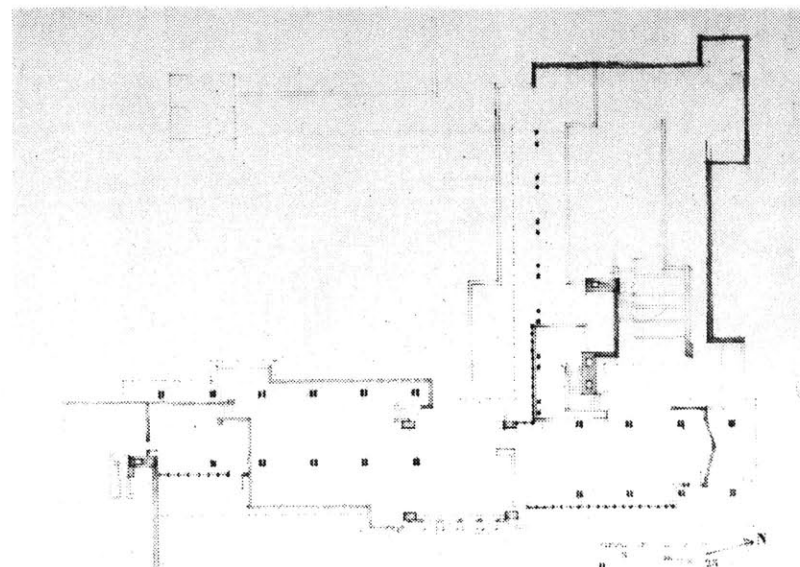
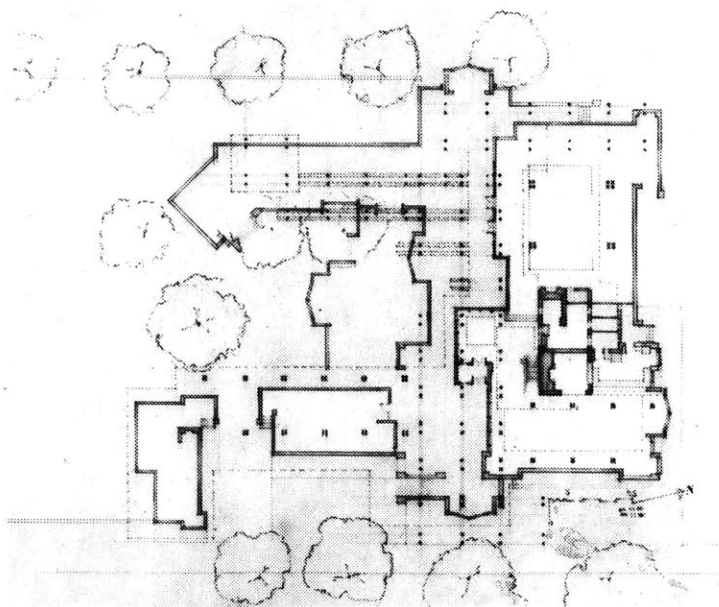
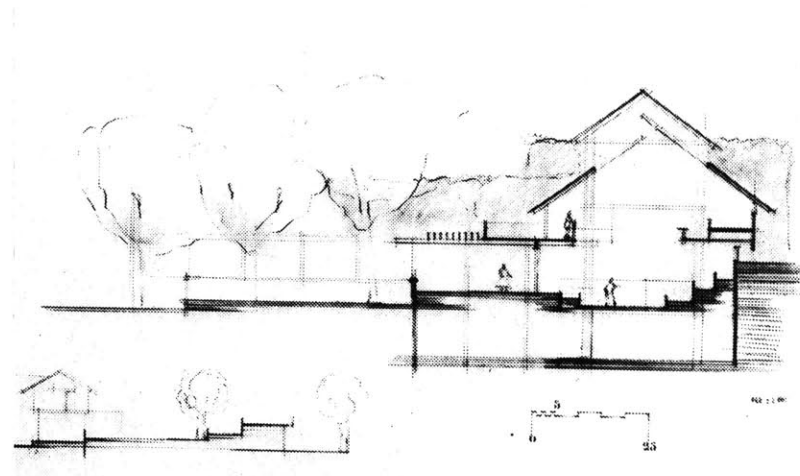




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This leads to the definition of what might be called *imageability*: that quality in a physical object which gives it a high probability of evoking a strong image in any given observer. It is that shape, color, or arrangement which facilitates the making of vividly identified, powerfully structured, highly useful mental images of the environment.

(Lynch. 1960, p. 9.)

It is therefore not only important that our environment has a spatial structure which facilitates orientation, but that it consists of concrete objects of identification.

(Norberg-Schultz. 1979, p. 21.)

Using the word "linguistic" I have tried to suggest that there is an uneconomic margin in the act of designing which employs itself in a communicative way and is fundamentally separate from everything that the word "ornament" connotes.

(Summerson. 1977, p. 8.)

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## Character and Identification

The building and garden are organized by three ideas, first, by the building as a grove of trees, second, by the use of light, and third, by a central hearth. In addition, every detail has the power to communicate a special character which relates to its role in the overall scheme. The following section is a discussion of selected details, examining what and how they communicate.

A simple example of Norberg-Schultz's "concrete object of identification" is the trail blaze. At Flying Moose, a number of trails through the woods are marked with red painted tin can lids, nailed to trees at approximately eye level. The distinct color is combined with a simple shape which makes the trail easy to follow, even for those of us who are color blind. These red tin can lids say, "Here is the trail. You're not lost. Don't worry; food and shelter this way!"

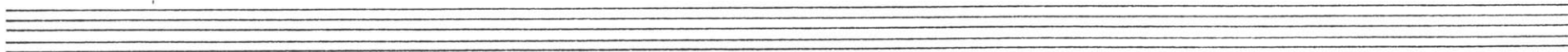




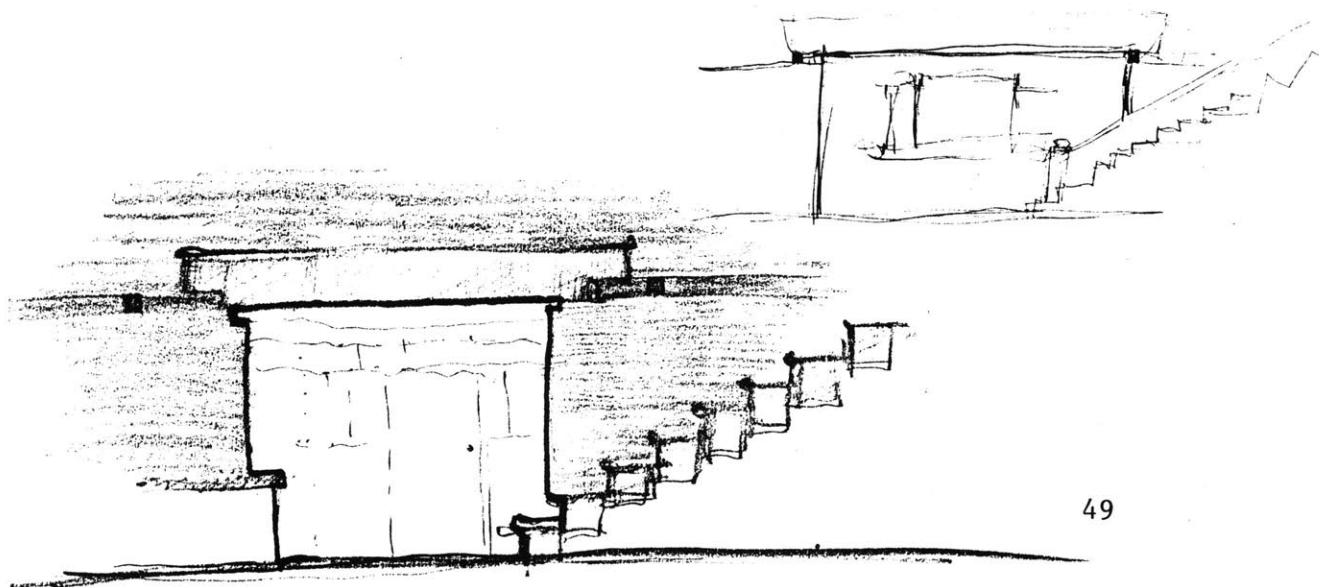
48

48 CONCRETE OBJECT OF IDENTIFICATION, on the trail from Roaring Brook to Russel Pond, Baxter State Park, Maine. Note trail blaze in foreground.

49 CONCRETE OBJECT OF IDENTIFICATION, detail study for masonry opening.



In the meetinghouse, the red tin can lid has been translated into a square tile. It is found just above eye level around important openings and doors. It says, "Yes, you can come in here. It's safe and public, and you won't get lost." By their placement at all major openings, the tiles form a continuity through repetition of a minor element.



49

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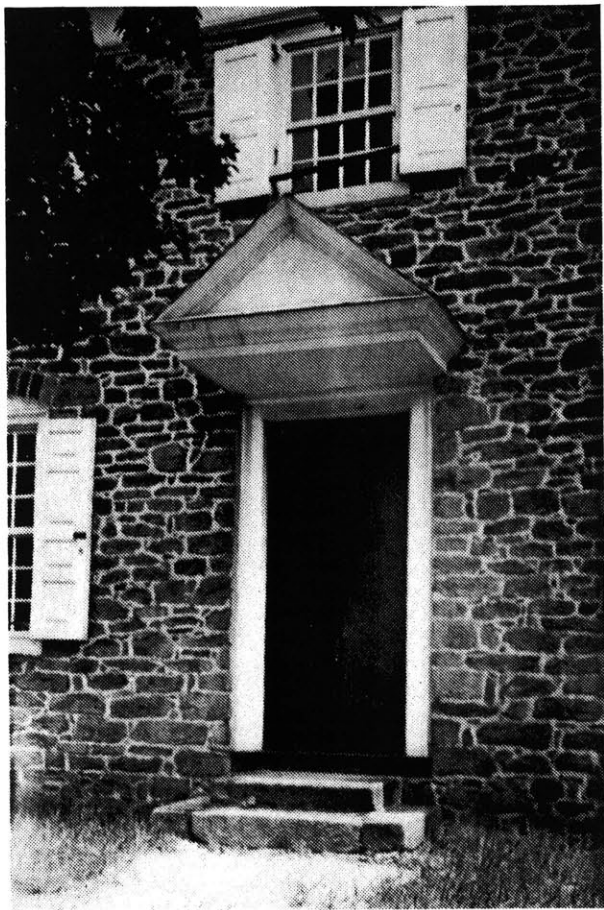


When a specific use is involved, the character of the object should communicate that use. Doors are an example. The size of a door bespeaks its use, if it be for a person, a wagon-load of hay, or a delivery truck. The door always expresses the nature of the spaces beyond it. The heavy monolithic plate-glass doors to a bank are intended to communicate the open and trustworthy nature of the business, and at the same time, their seamless construction implies that there will be no tampering with these doors. The door to the lodge in Maine, on the other hand, is a screen door that swings both ways with no latch whatsoever, providing the minimum interruption between indoors and out.

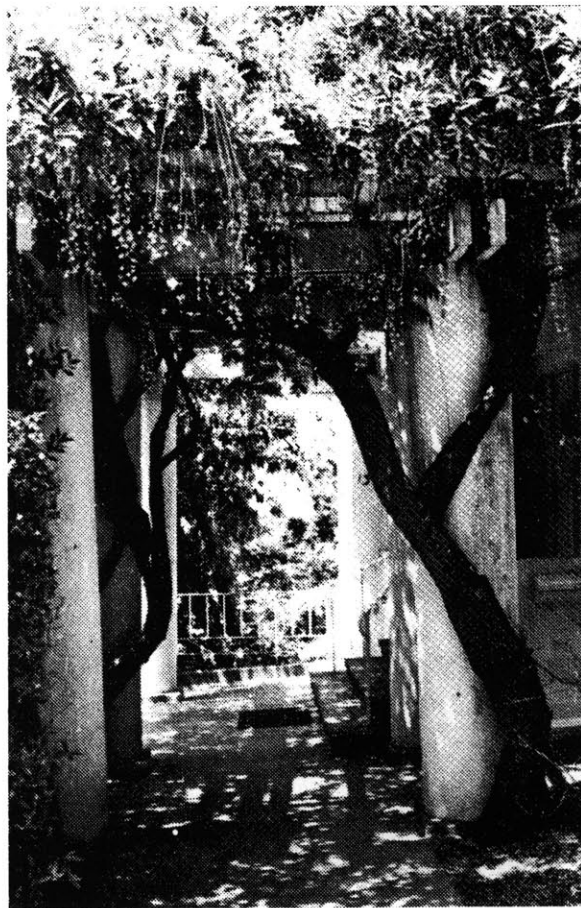
The door in the sketches is intended to express invitation to the entry hall, from which one proceeds either to the meeting room or the social space. It does not prepare the person entering for silence, as the door into the meeting room itself would be expected to do.

50 DOORWAY, at Buckingham Friends Meeting.

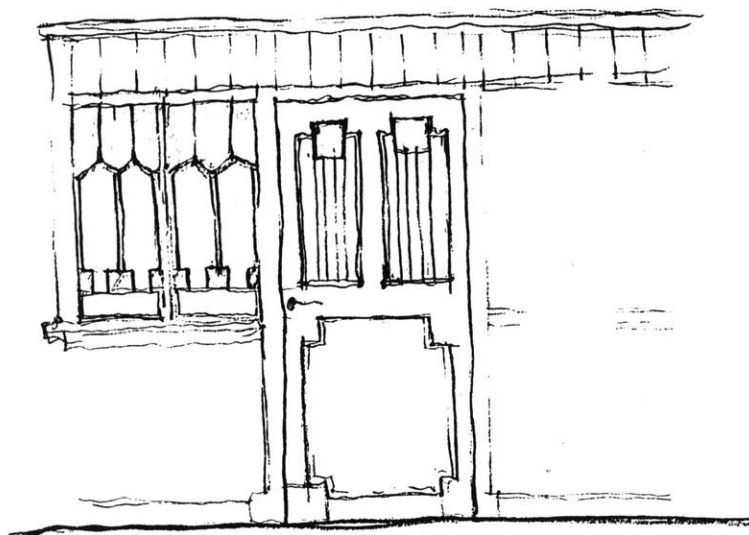
51 ENTRY REFERENCE



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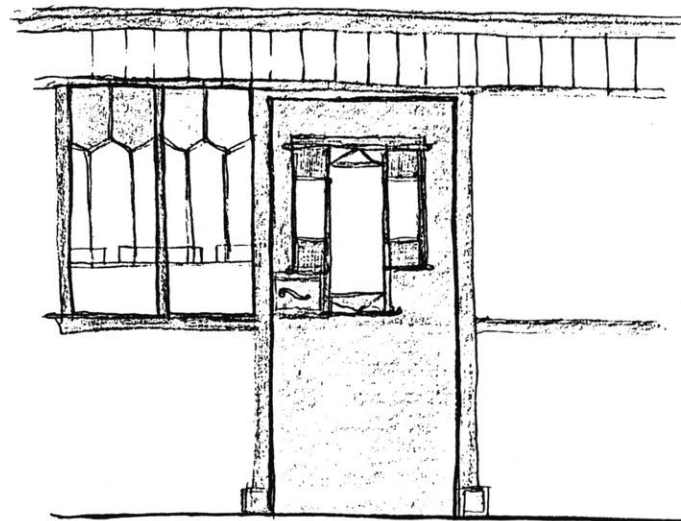


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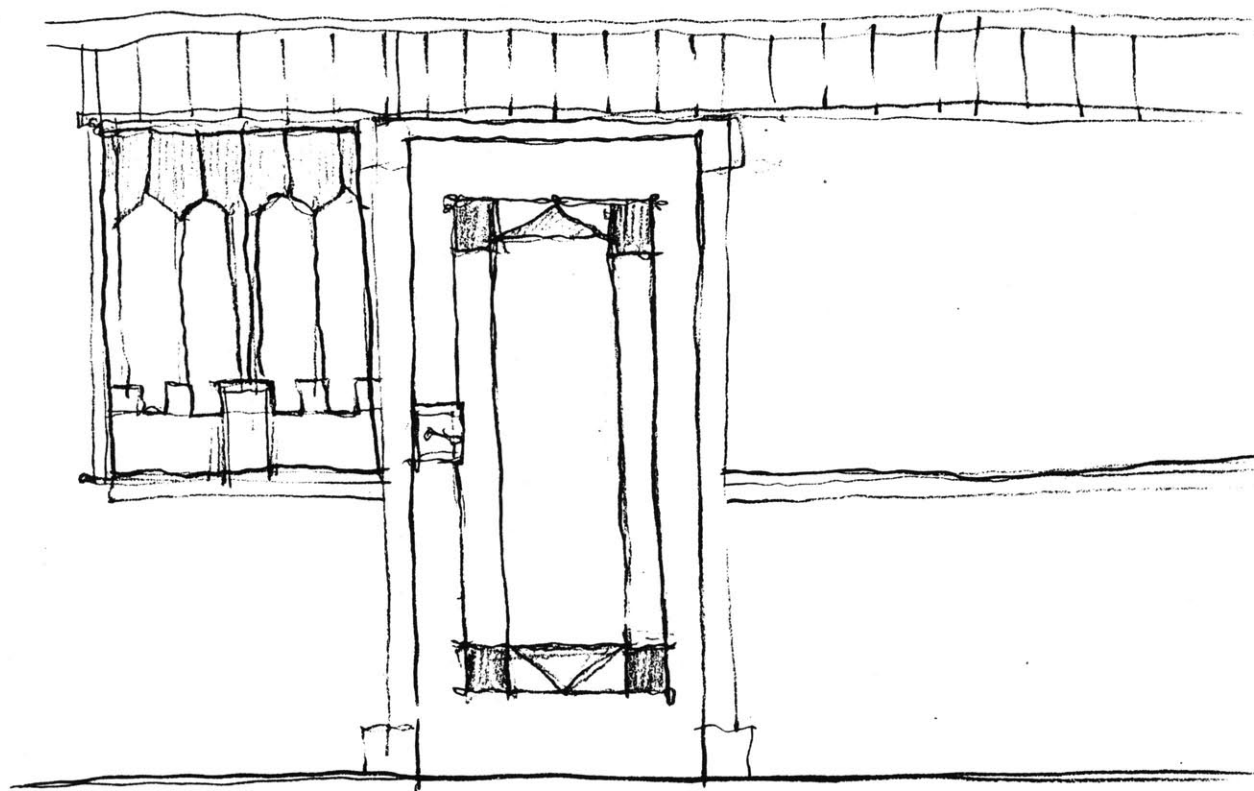
52 53 54

EXPRESSIVE QUALITIES OF DOORS, studies of front door configurations.

Initial sketches seemed expressive of defense and fortification, so a more open, taller door was explored as a means of expressing invitation.



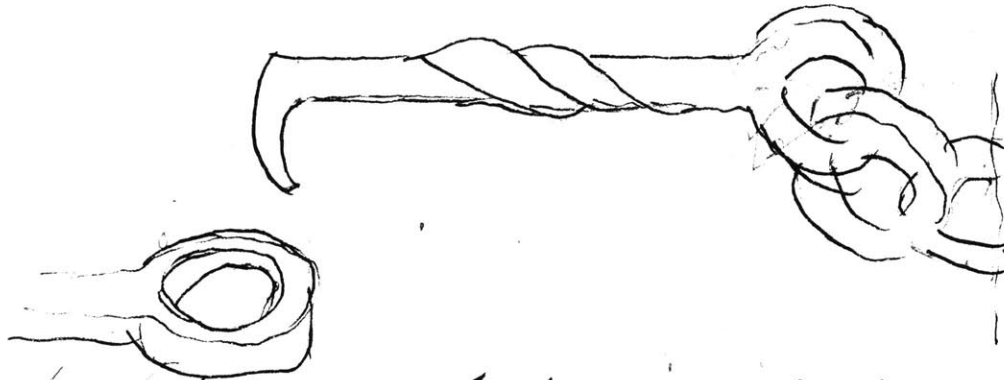




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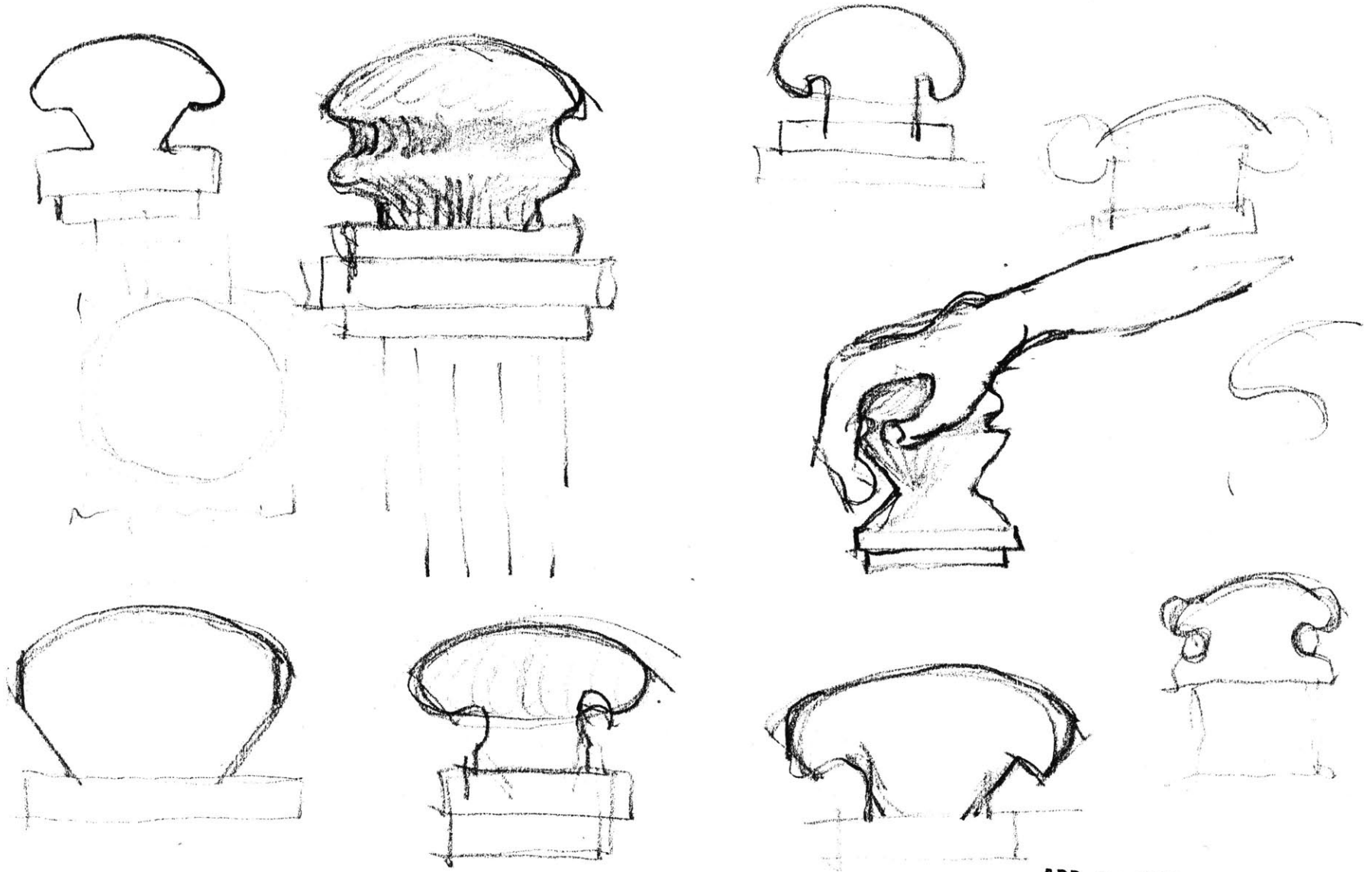
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*the shaker concept of simplicity distained fashion,  
but allowed for that extra twist which removed  
objects from the realm of the ordinary*

14.

The sense of touch adds a new dimension to the potential for character and identification. Anyone who has canoed for a few hours straight will know how important it is for the handle to fit the hand. An experienced canoeist can identify his or her own paddle just by holding it, without looking at it at all. A handrail on the stair needs the same strong identity. Its smooth texture invites touch, and its section should be designed to grasp. In the meetinghouse, the backs of the benches are fitted with similar rails, to give the person a place for their hands when they rise to speak.





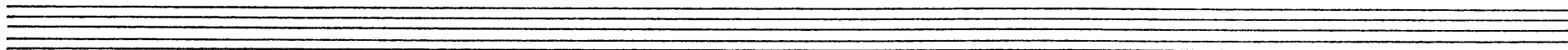
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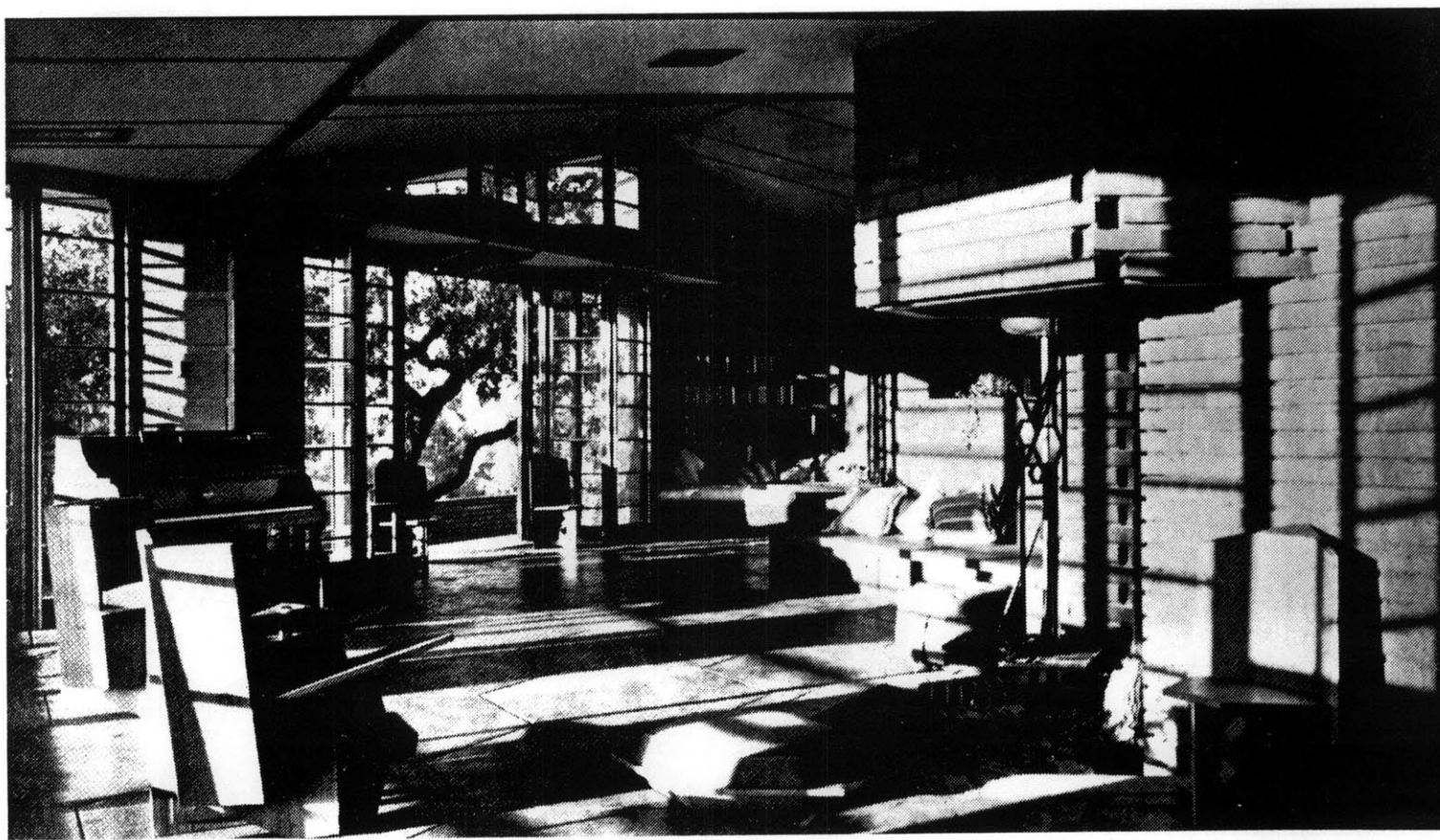


In the overall scheme the northern edge was kept rigid while the southern edge varied. In the social space, the west edge is hard and massive masonry, while the eastern edge is open and bathed in light from continuous windows. The fireplace room in the masonry mass is like a cave. Here, a person is no longer among columns, but is surrounded by a continuous brick surface, and can get "out of the woods" so to speak, without losing connection to the other spaces.

56      PAUL R. HANNA HOUSE, F. L. Wright, 1937. Masonry on right complemented by filtered light from the left.

57      PERSPECTIVE OF FIREPLACE ROOM, looking out to the south.







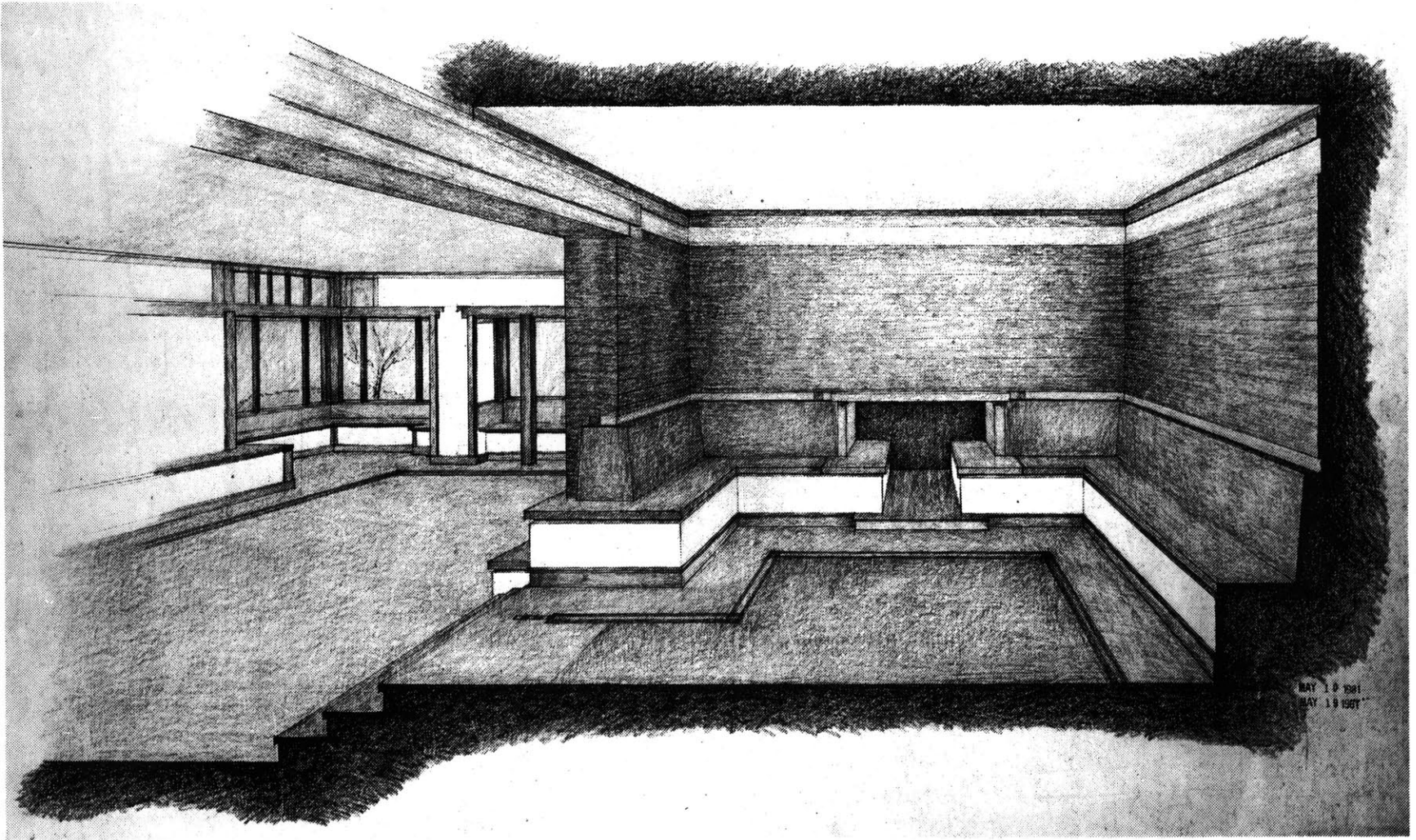


The door of the cavern was big enough to roll a hogshead in, and on one side of the door the floor stuck out a little bit, and was flat and a good place to build a fire on. So we built it there and cooked dinner.

We spread the blankets inside for a carpet, and eat our dinner in there. We put all the other things handy at the back of the cavern. Pretty soon it darkened up, and begun to thunder and lighten; so the birds was right about it. Directly it begun to rain, and it rained like all fury, too, and I never see the wind blow so. It was one of these regular summer storms. It would get so dark that it looked all blue-black outside, and lovely; and the rain would thrash along by so thick that the trees off a little ways looked dim and spider-webby; and here would come a blast of wind that would bend the trees down and turn up the pale underside of the leaves; and then a perfect ripper of a gust would follow along and set the branches to tossing their arms as if they was just wild; and next, when it was just about the bluest and blackest—*fst!* it was as bright as glory, and you'd have a little glimpse of treetops a-plunging about away off yonder in the storm, hundreds of yards further than you could see before; dark as sin again in a second, and now you'd hear the thunder let go with an awful crash, and then go rumbling, grumbling, tumbling, down the sky towards the under side of the world, like rolling empty barrels down-stairs—where it's long stairs and they bounce a good deal, you know.

"Jim, this is nice," I says. "I wouldn't want to be nowhere else but here. Pass me along another hunk of fish and some hot corn-bread."

(Twain. 1951, p. 52.)





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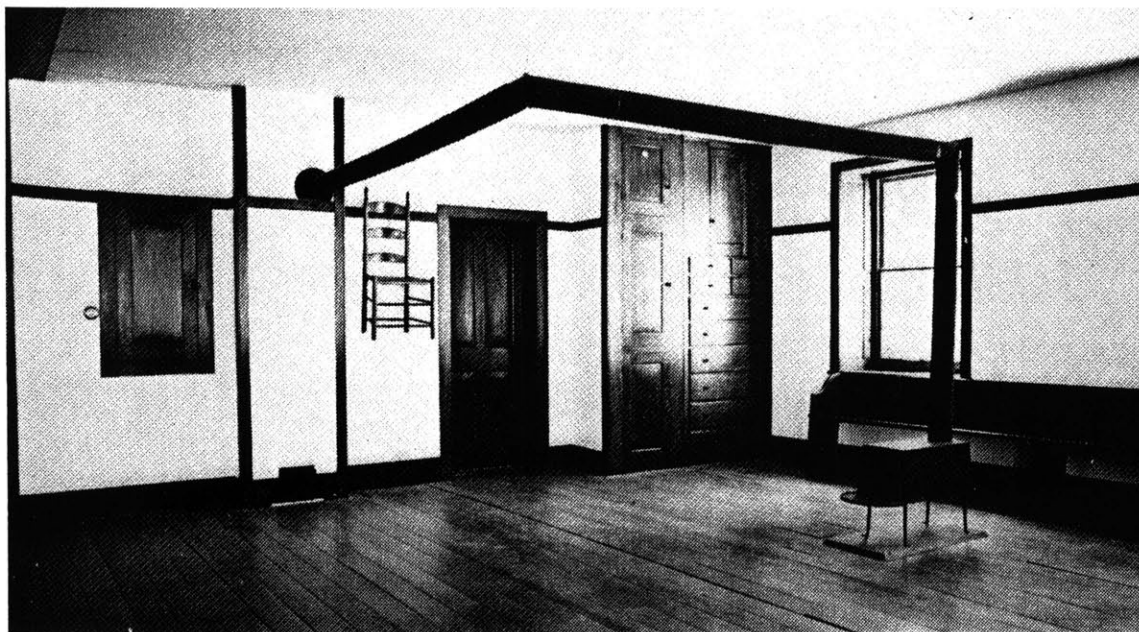
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In the woods, the vertical trees refer outward to the sky, to the stars and to the infinite and changeable. The horizontal earth is the solid, unchanging and finite. That horizontal line where the earth meets the sky is a strong reference which helps one place oneself in the world. The most satisfactory camp sites are those on lake edges and hilltops which provide a view of the horizon.

In the social room, horizontal bands of windows and casings are used to provide a virtual horizon. This allows elements in the room to "register" to the horizon band, giving them stability. Windows above the band admit high "sky" light; those below allow for views and connection to the ground outside. By "registering" elements above or below this line, they become organized and understandable, but not controlled, by their relationship to the constant. In addition, the horizontals in the room give inhabitants the opportunity to understand the full 14' height of the room in increments of size which are smaller, and therefore less dominating.

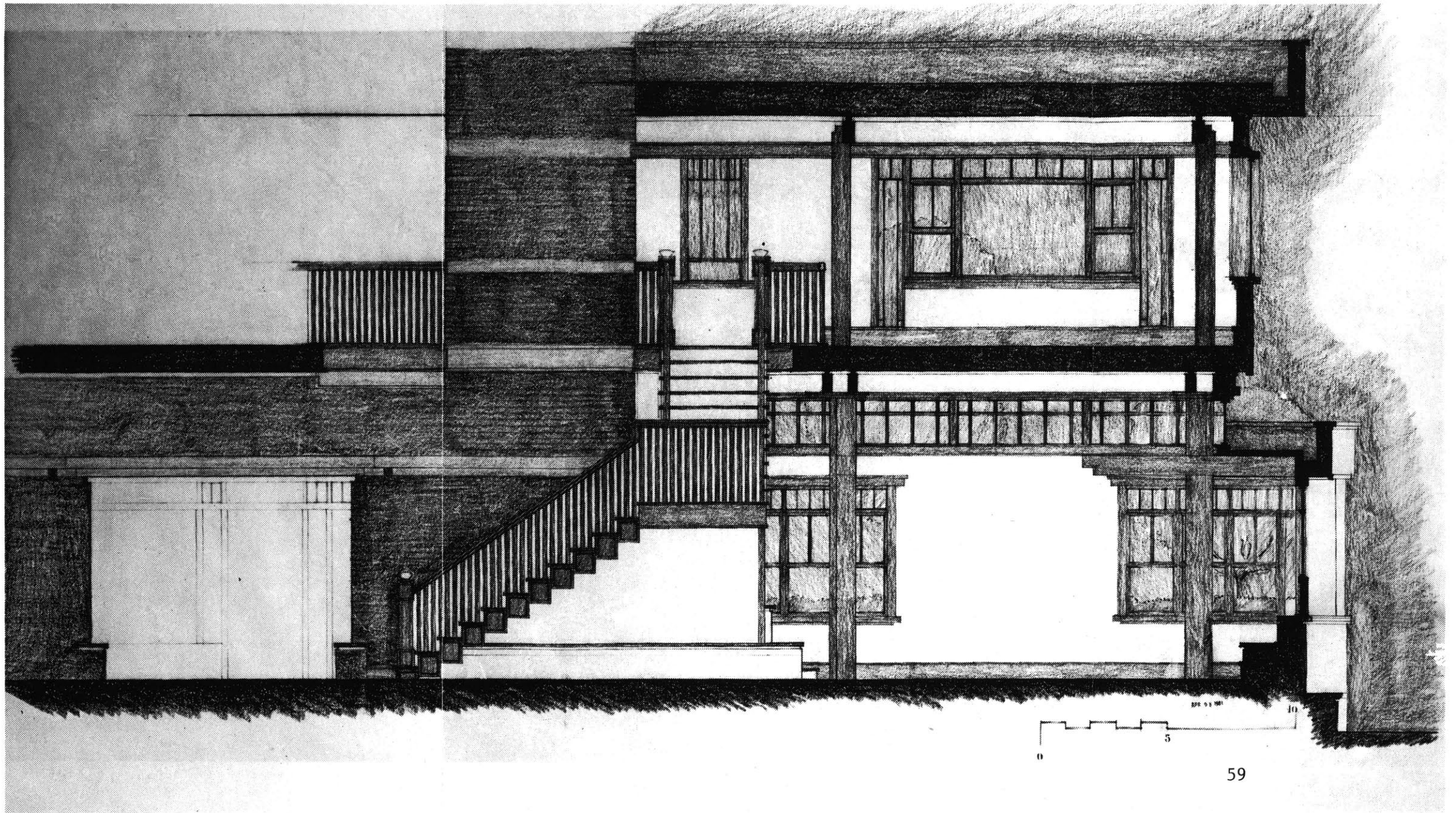


58      REGISTRATION, interior, Shaker dwelling, Hancock, Mass., 1830, showing registration of windows and doors to the continuous horizontal peg rail.



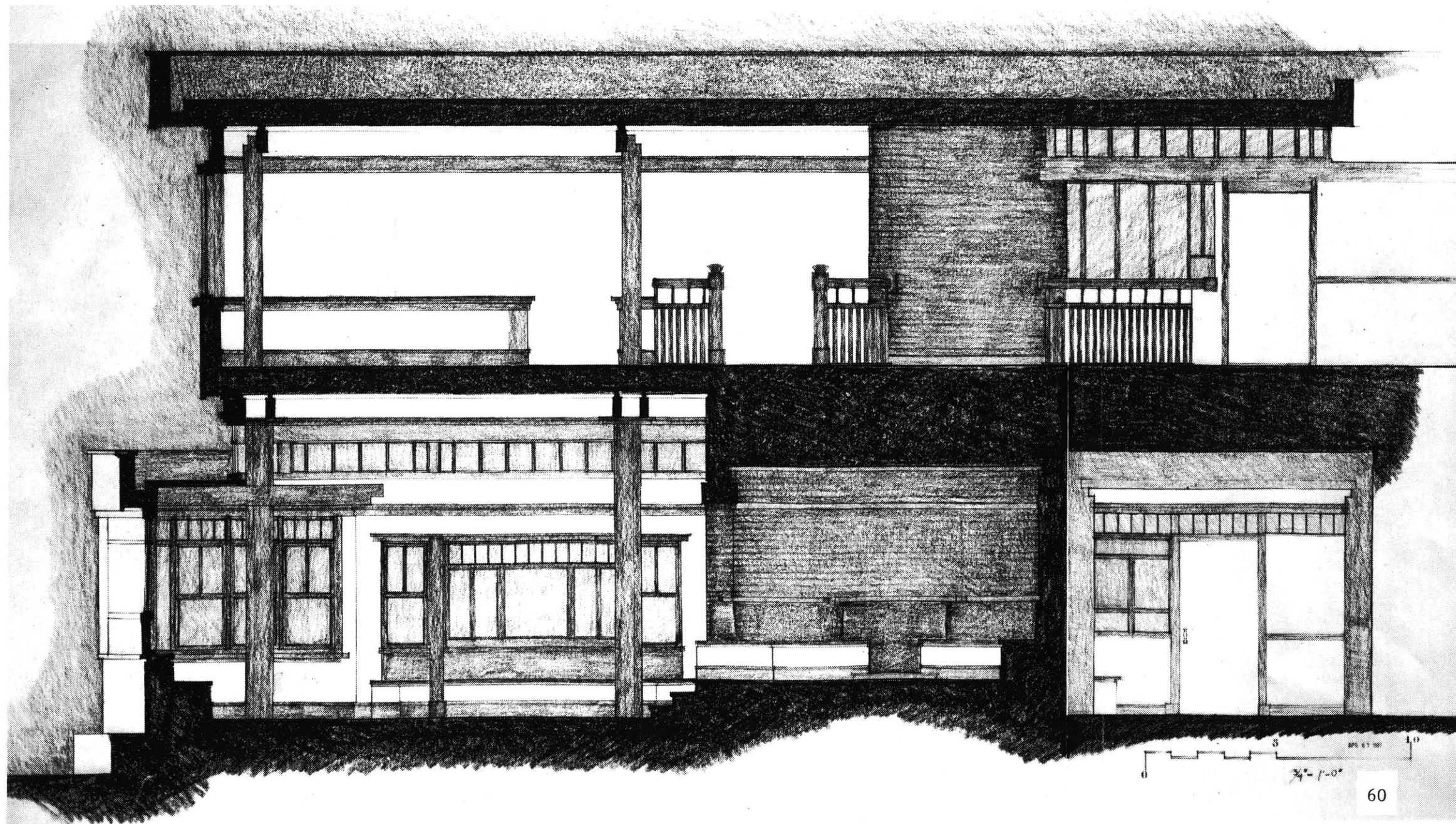
- 59 SECTION/INTERIOR ELEVATION STUDY OF SOCIAL ROOM, facing north.
- 60 SECTION/INTERIOR ELEVATION STUDY OF SOCIAL ROOM, facing south.
- 61 SECTION/INTERIOR ELEVATION STUDY OF SOCIAL ROOM, facing west.
- 62 SECTION/INTERIOR ELEVATION STUDY OF SOCIAL ROOM, facing east.



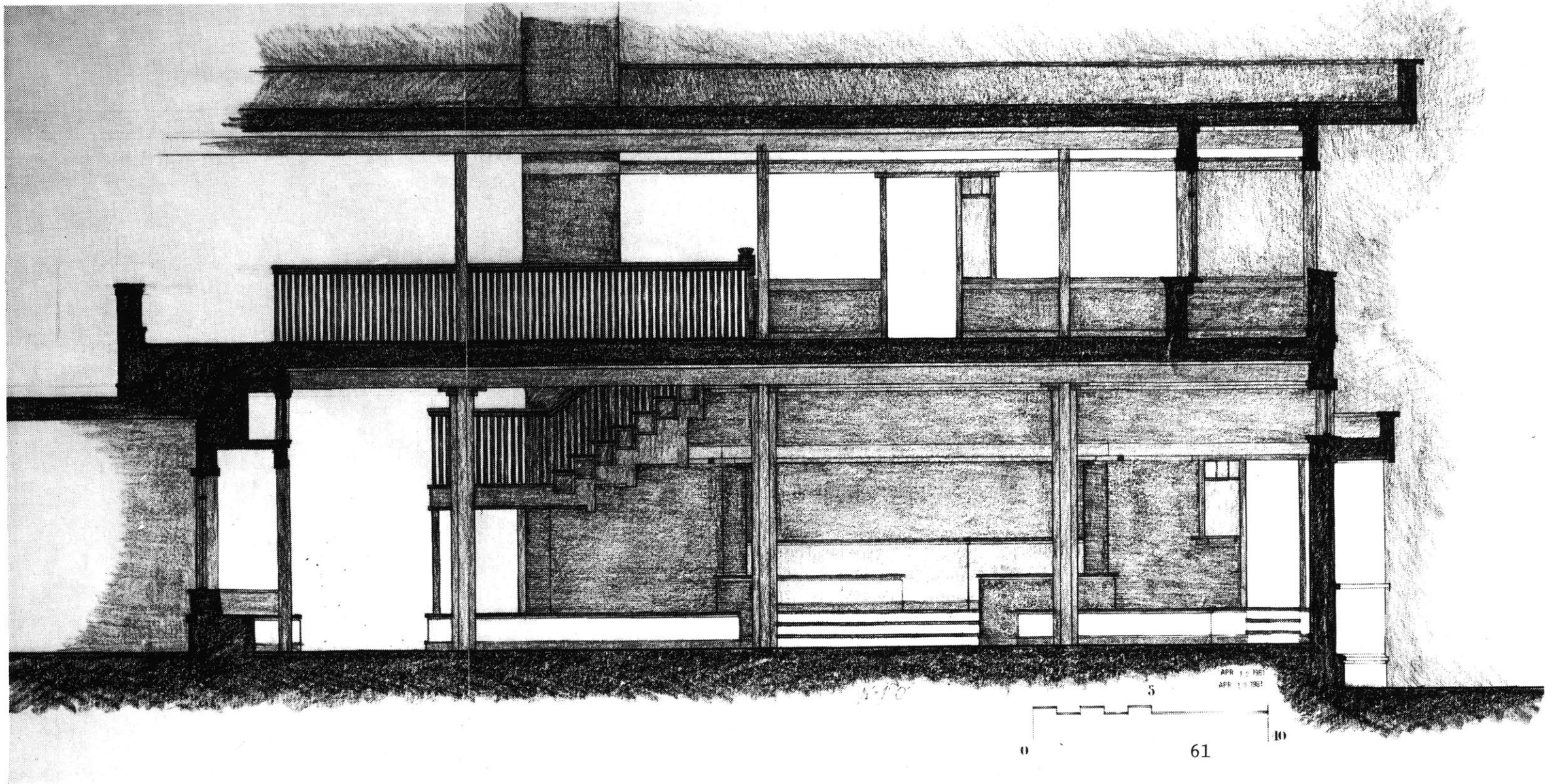






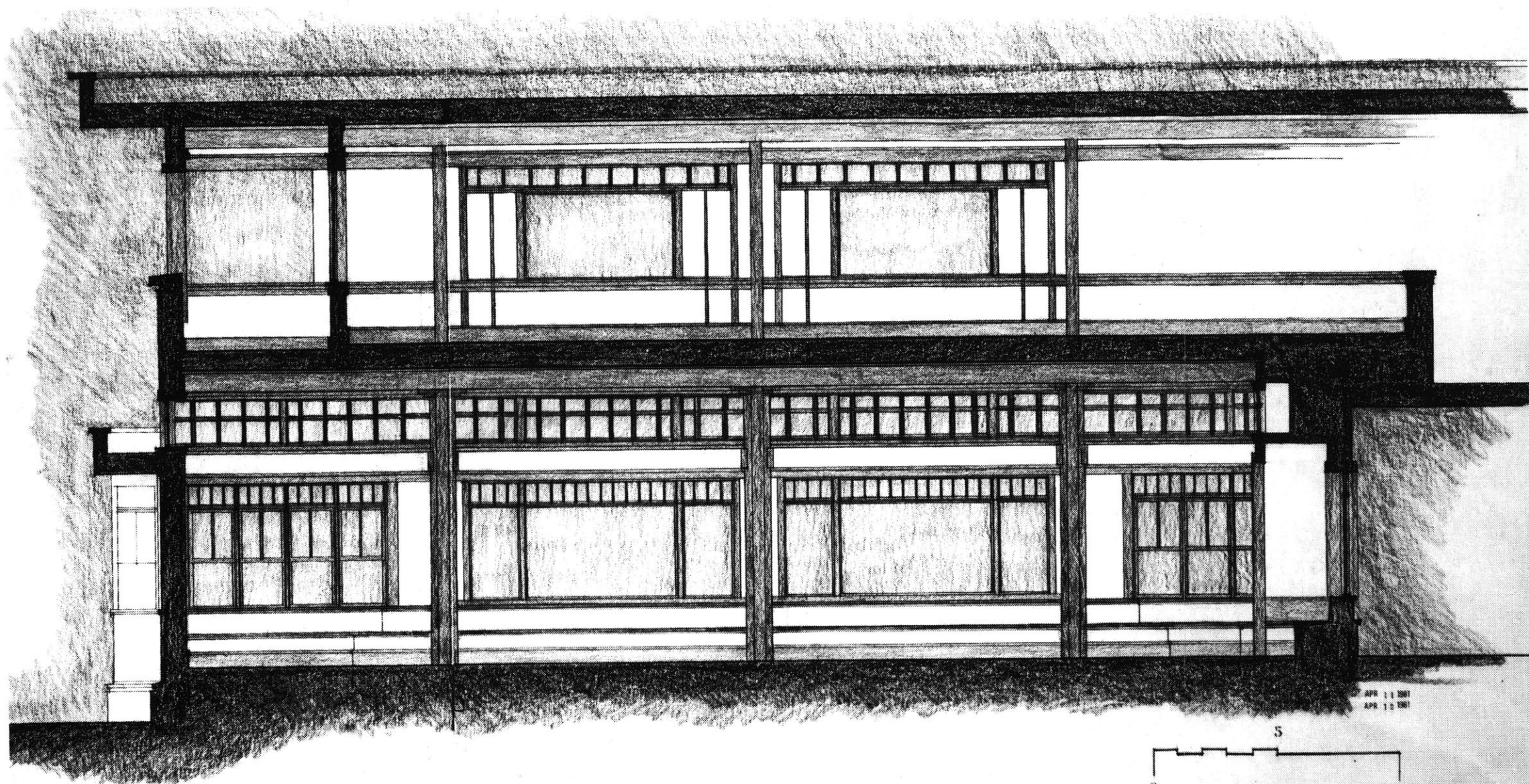










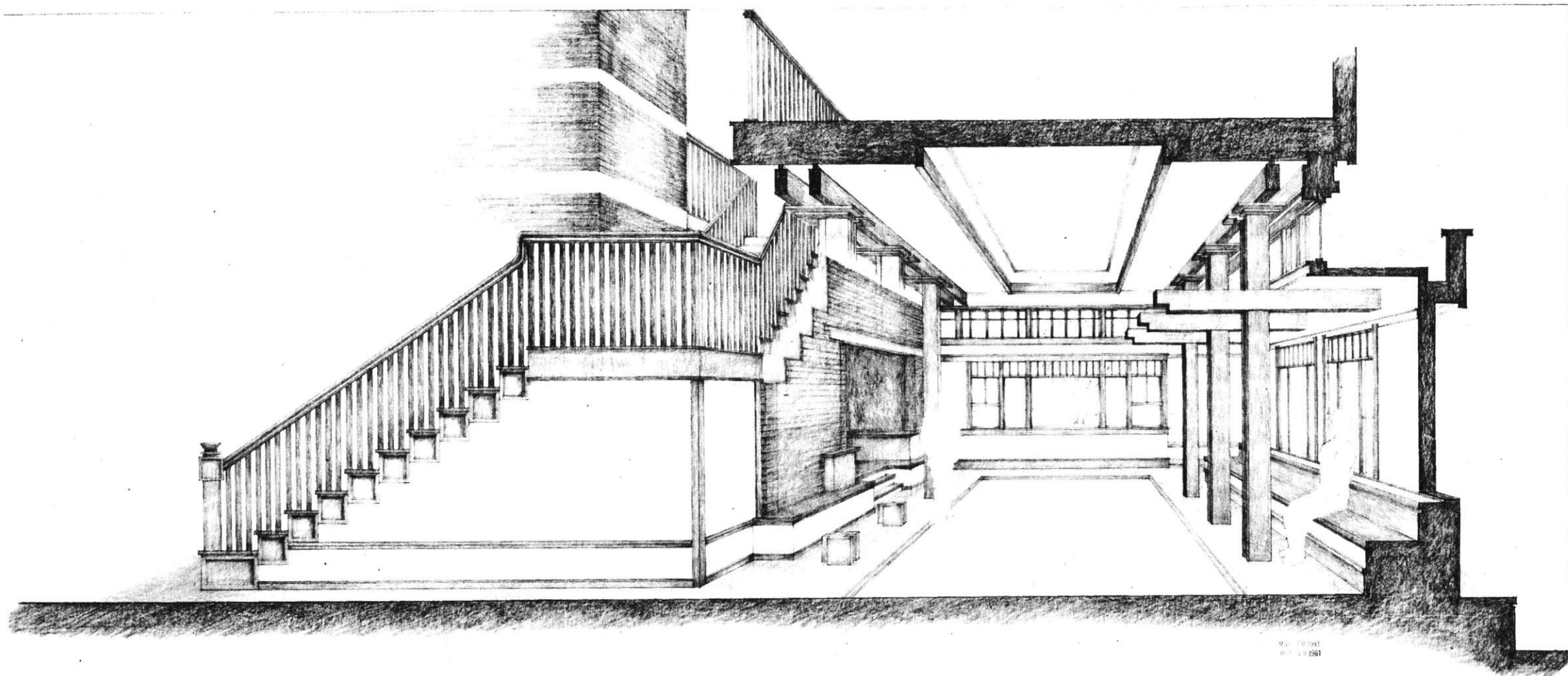


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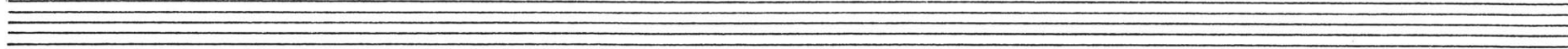
63 AVERY COONLEY PLAY HOUSE, F. L. Wright, 1912.

64 PERSPECTIVE OF SOCIAL ROOM, facing north, opening to fireplace room on the left.





64

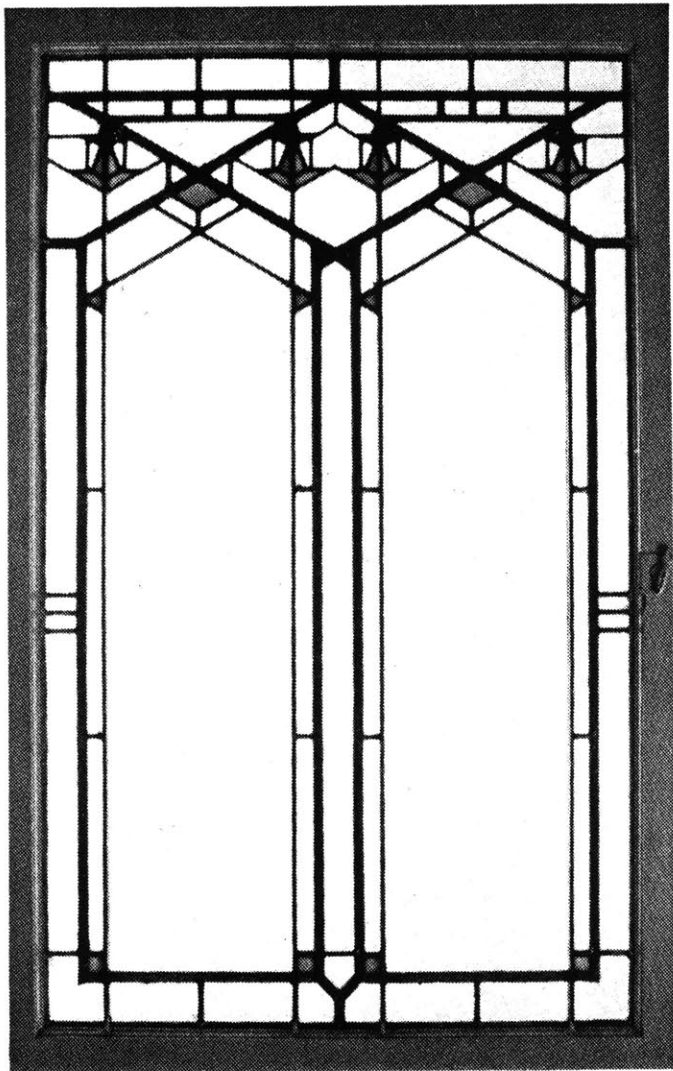


Windows play a central role in the character of the space. Here an attempt has been made to place the windows on the basis of their use. Considerations such as visual connection to the outdoors, ventilation, and light influenced the selection of sill and head heights. In addition, the patterns of the mullions are intended to admit light in a way reminiscent of light filtering through the branches of a tree. Thus, the higher the window, the more frequent and slender the mullions. In special cases, the mullions form a deliberate abstract picture of a tree. This occurs at the entry and at the top of the stairs.

65 WINDOW, B. HARLEY BRADLEY HOUSE, F. L. Wright, 1900.

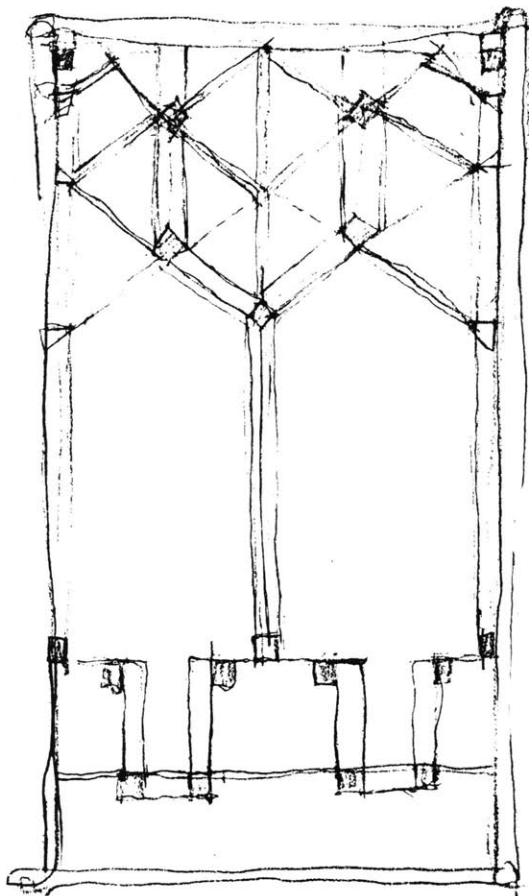
66 67 SKETCH STUDIES for window.



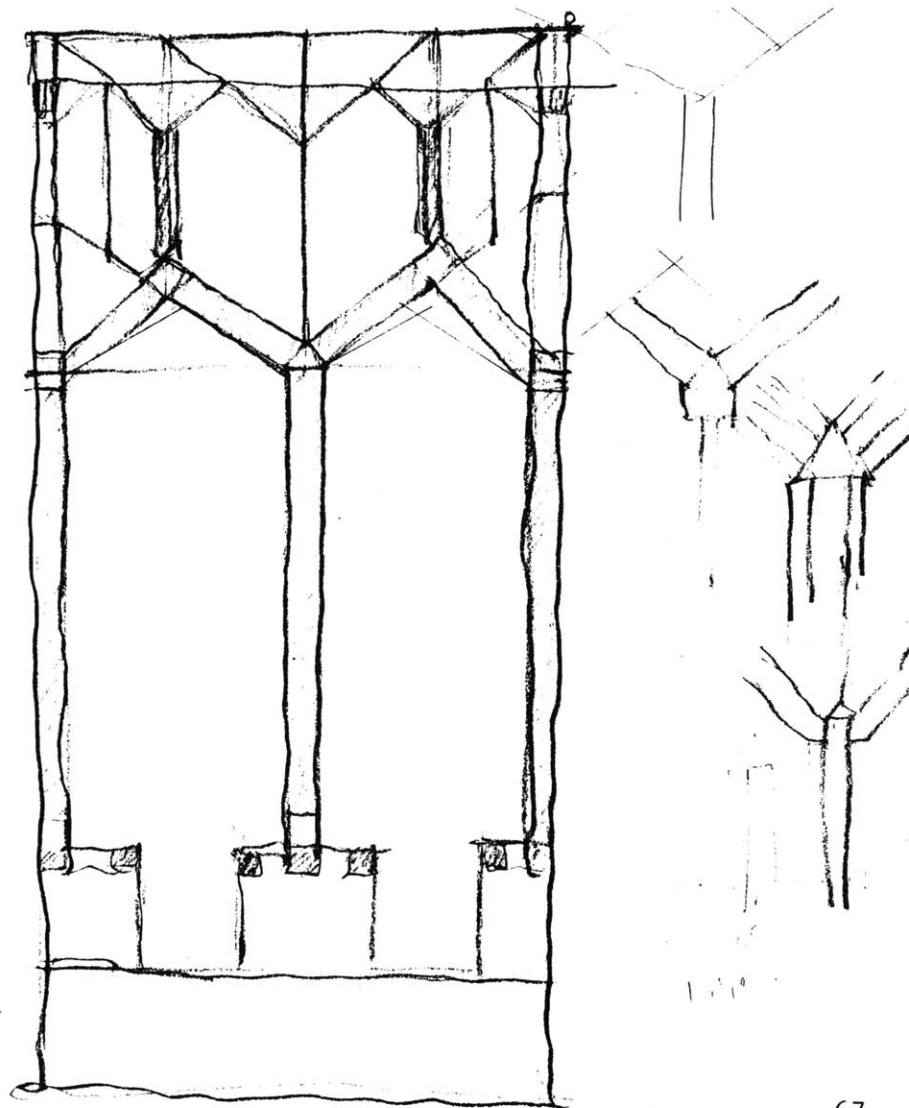


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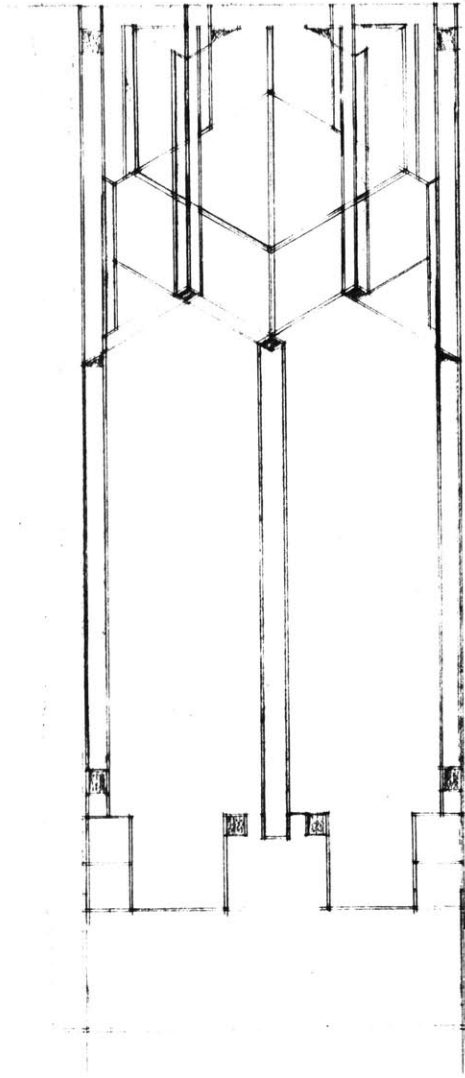


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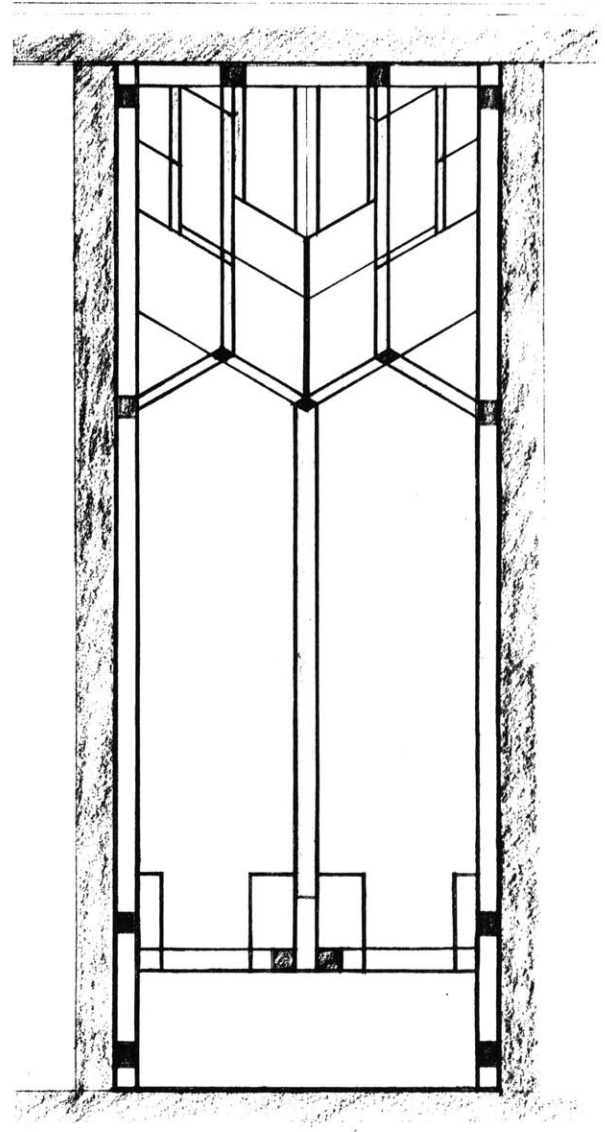
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68 69 IDENTIFICATION THROUGH REPRESENTATION, study for a leaded glass window, to occur at entry.

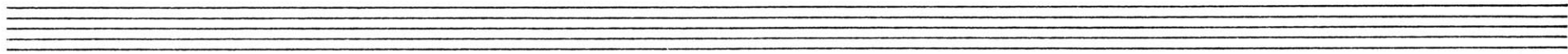




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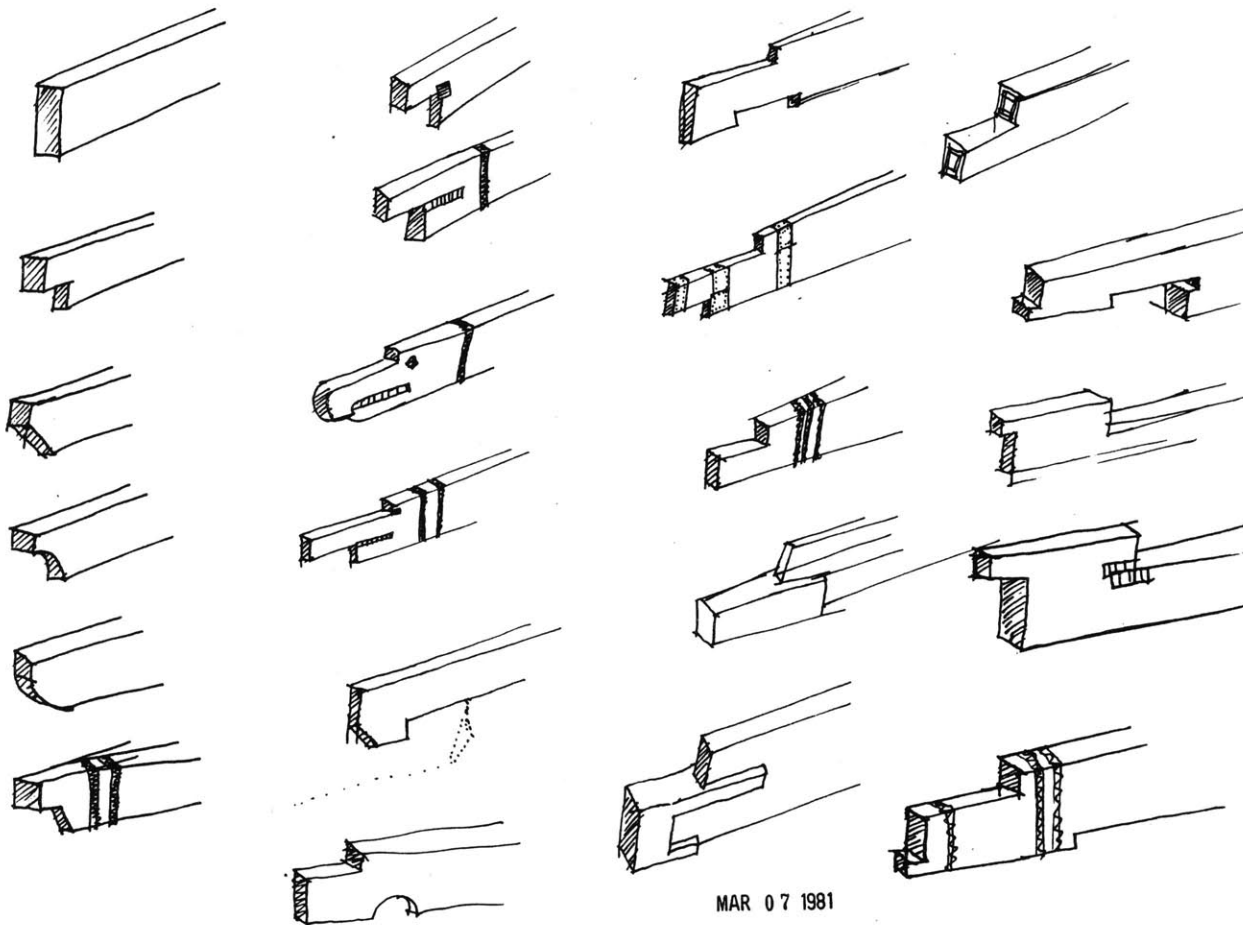
69





Ends and corners are most important in identifying and describing location. A simple example is a length of hemp rope, perhaps a guy line for a tent. A properly maintained rope will always have a "whipped" end, that is, the end of the rope is wrapped with twine to prevent its unravelling. Alternatively, it will be back spliced, where the strands of the rope are woven back on themselves, thickening the end and again preventing unravelling. In addition, the twine, or thickened end of the rope, is easily identified in a hank or tangle, facilitating use.

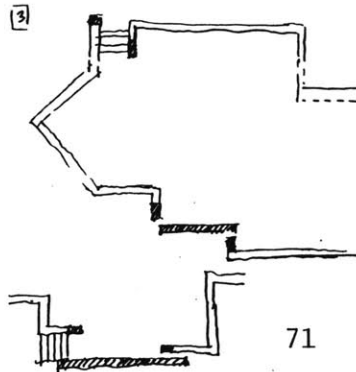
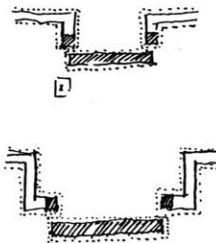
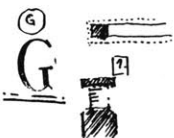
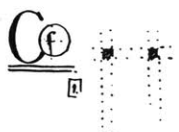
Examples of end and corner articulation in the social space are seen in the beam ends, floor pattern, bench details and in the plan of the entire space. In the case of the plan, the enlarged corners provide references for the entire room and at the same time, they provide alcoves for more intimate inhabitation associated with the larger, formal space.



70      SKETCHES OF POSSIBLE INTENSIFICATIONS OF ENDS.

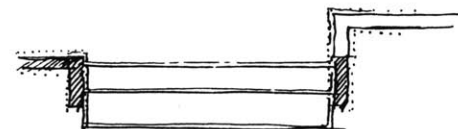
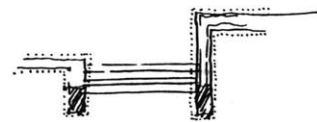


71 72 73 74 SKETCHES OF POSSIBLE INTENSIFICATIONS OF ENDS AND CORNERS.

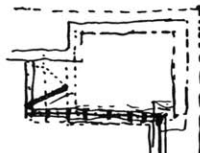
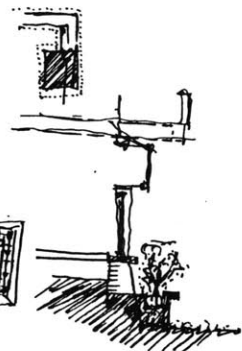
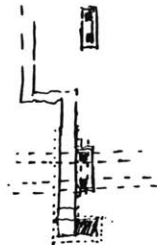


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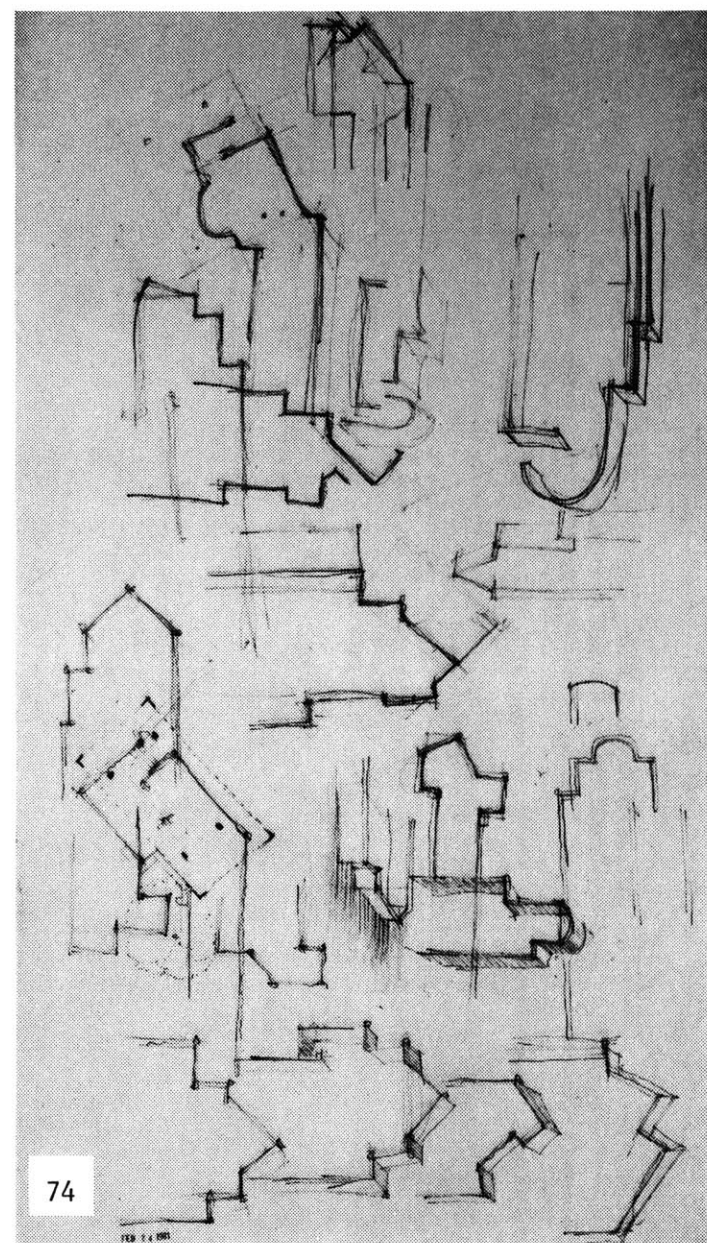
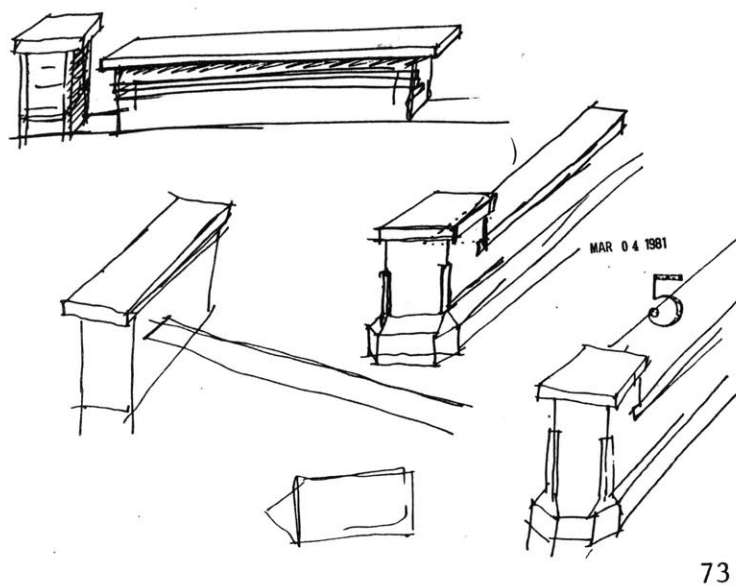


G+C



72

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There is a marvelous variety in the forest floor--not only the topographical variety of slopes and tables, crevices, hillocks and outcroppings, but variety in the materials. In the space of a few hours, one might encounter packed dirt, bare granite, pebbled stream beds, grass, sand, moss and lichen, and a bed of pine needles. For those who spend much time in the woods, each floor offers clear opportunities. Packed dirt, rock or any mineral floor is suitable for fires and fire places. A thick bed of moss is an ideal spot for a nap or a moment of contemplation. A grassy expanse is suitable for field sports.

Masonry walls and various pavements make up the floor of the meeting house, with textures and finishes appropriate to their uses; grass in the garden, brick and quarry tile for outdoor circulation and entry hall, wood for the meeting and social halls, a carpet for the library, etc.

The floor pattern reinforces the path, announces the bases of the columns and outlines places to pause. In the study, oak strip flooring is combined with thin cherry strips to create the pattern. Elsewhere, this simple motif might be picked up on tile, or outdoors, in two colors of brick.

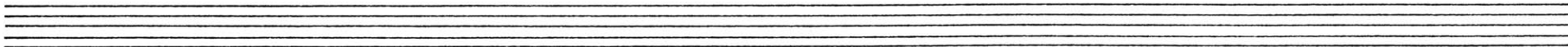


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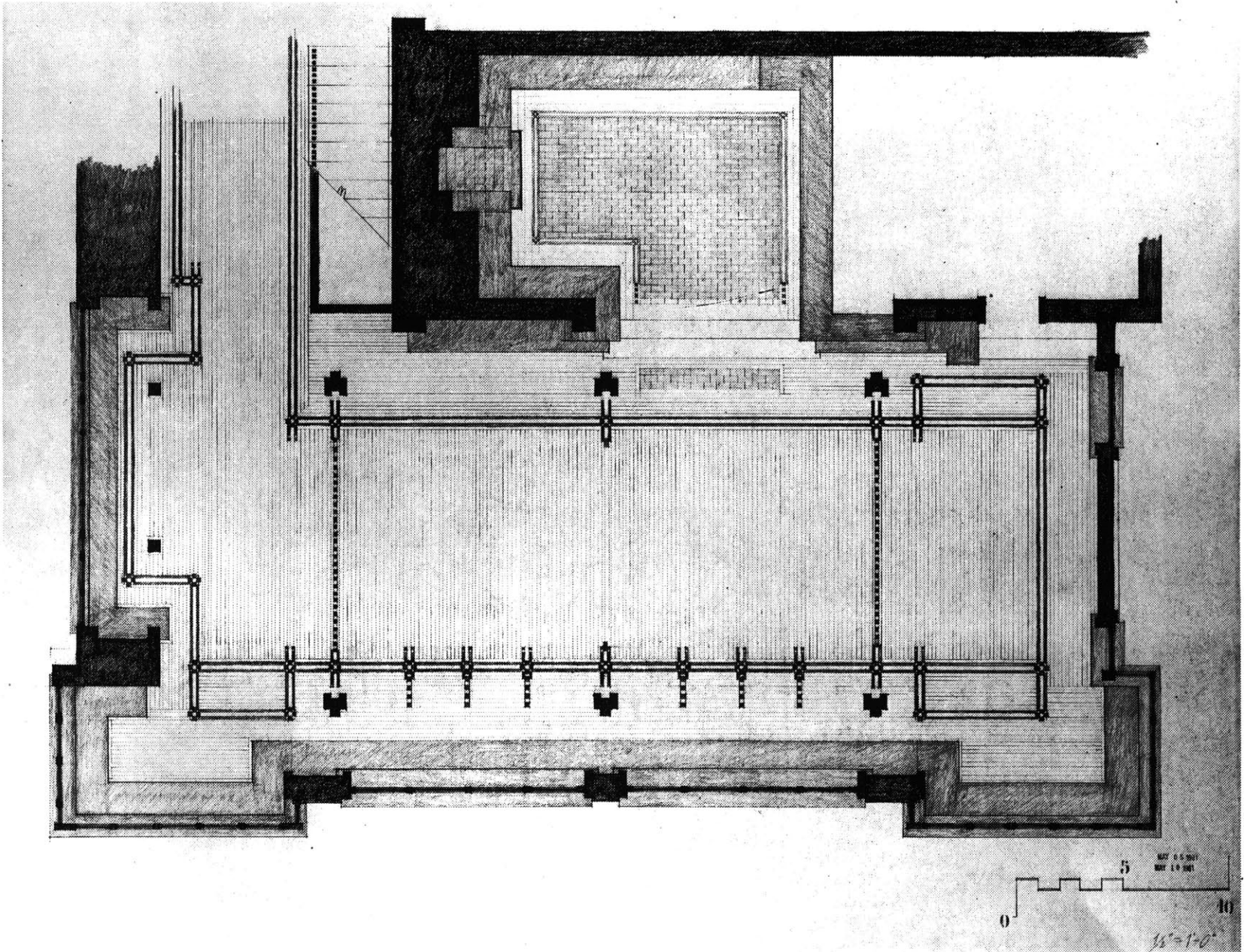
The German-born American architect Gerhard Kallmann once told a story which illustrates what this means. Visiting at the end of the Second World War his native Berlin after many years of absence, he wanted to see the house where he had grown up. As must be expected in Berlin, the house had disappeared, and Mr. Kallmann felt somewhat lost. Then he suddenly recognized the typical pavement of the sidewalk: the floor on which he had played as a child. And he experienced a strong feeling of having returned home.

(Norberg-Schultz. 1979, p. 21.)

- 75      TRANSITION FROM INTERIOR TO EXTERIOR, Carriage Stop, Katsura Palace,  
         Japan, view from interior.
- 76      FLOOR PATTERN STUDY, 1/2" scale, social space.



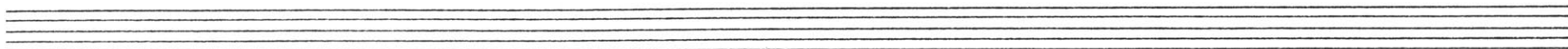




At Flying Moose, people making trips lasting a week or more invariably carry with them a dining fly. It is erected handily every night, whether or not rain threatens. The simple overhead gesture (and the act of choosing its location) ensures a sense of protectedness and repose. It allows a focusing of common energies in preparing and eating a meal.

In the social room, the articulation in the ceiling serves a similar purpose. Raising the central portion of the ceiling 12 inches creates the same sense of overhead protection and focus.

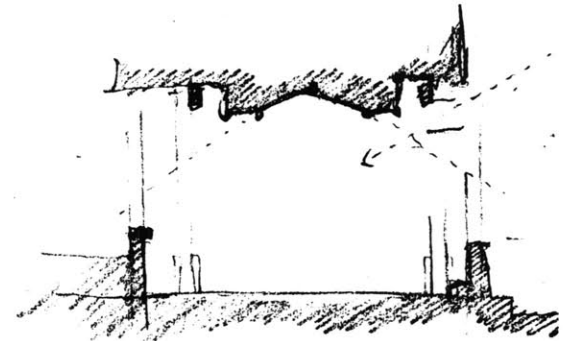
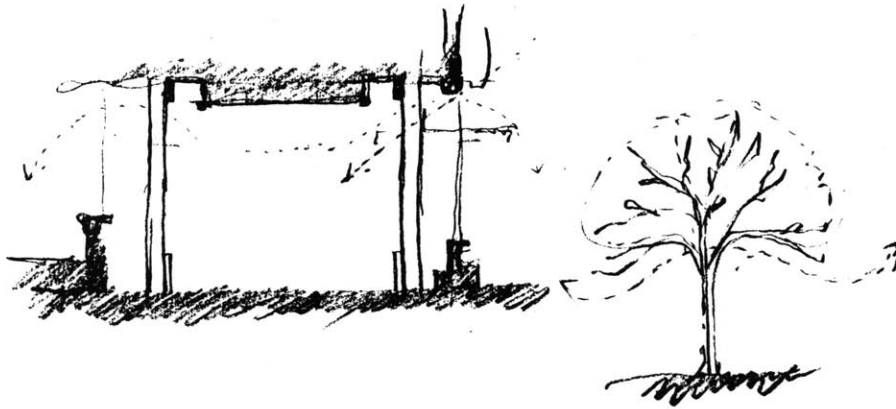
- 77      OVERHEAD GESTURE, sky over the St. Croix River in Maine.
  
- 78      OVERHEAD GESTURE, sketches for ceiling plan and section.
  
- 79      OVERHEAD GESTURE, canopy, Francis W. Little House, "Northhome,"  
         F. L. Wright, 1913.
  
- 80    81.      OVERHEAD GESTURE, sketches for ceiling plan and section.
  
- 82      OVERHEAD GESTURE, reflected ceiling plan, drawn at 1/2" scale.



77



101

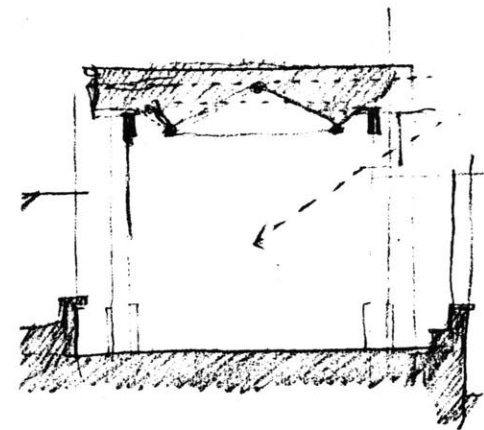


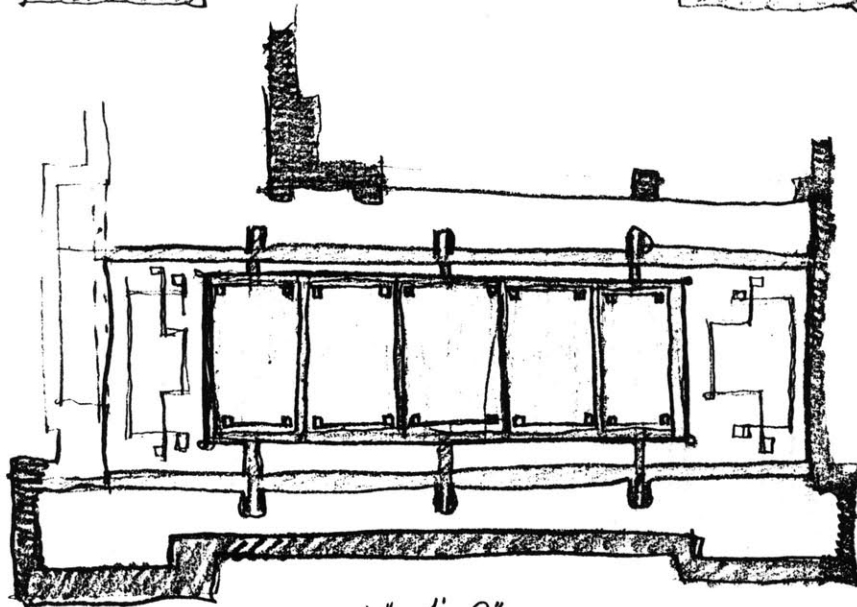
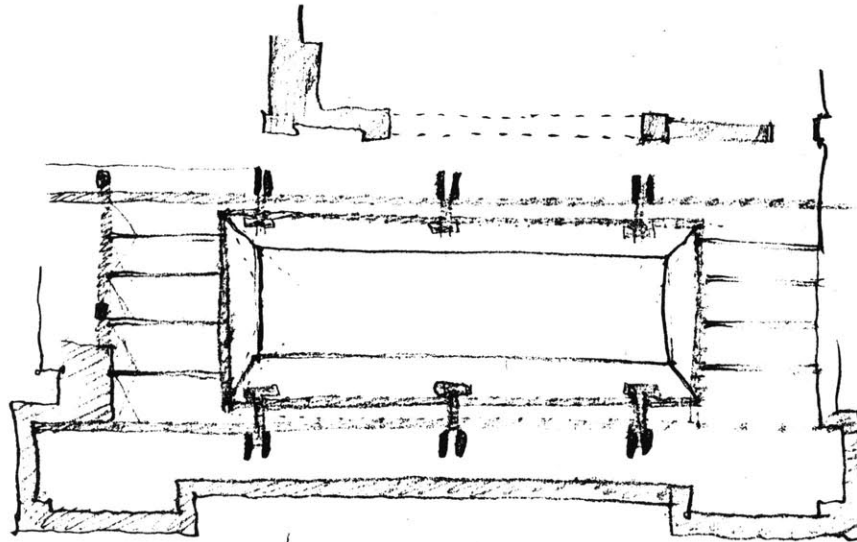
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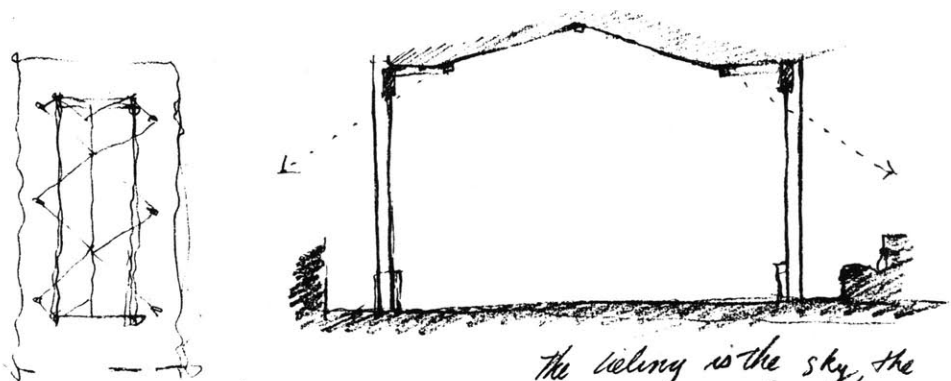
80

 $\frac{1}{8}'' = 1'-0''$ 

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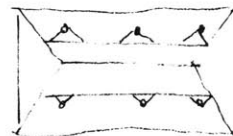
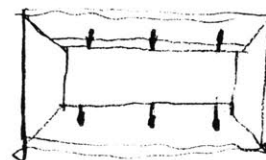
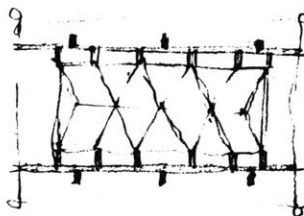
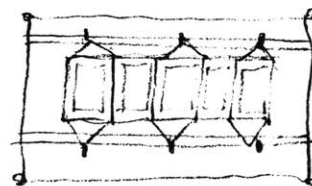
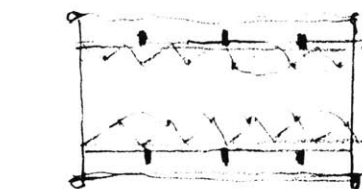




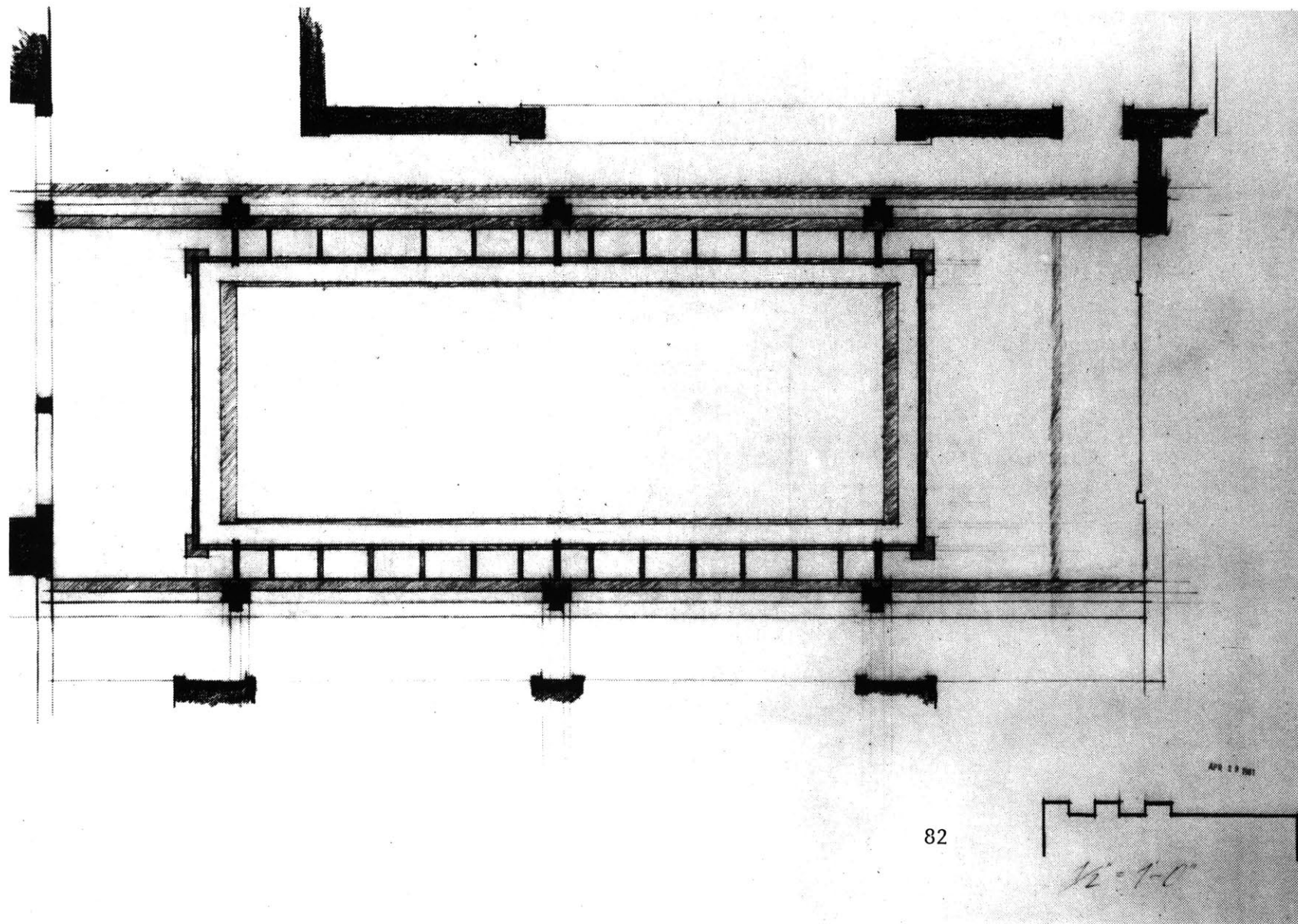


*the velum is the sky, the  
canopy, the tent.*

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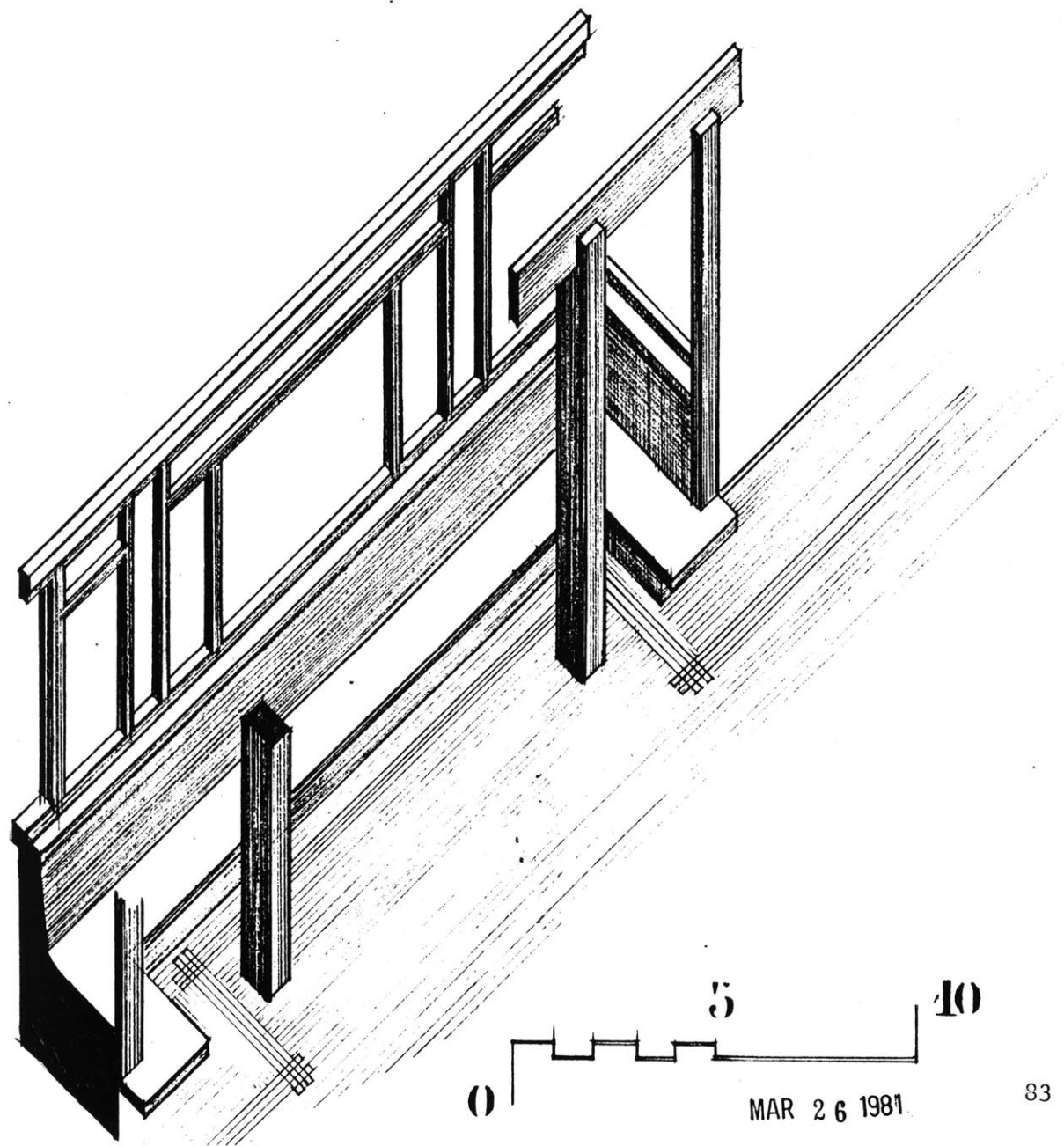
81





In a building, very different elements can express their common source by mimicking one another's dimensions. In the upstairs hall above the social space, or in the alcove at the southern end of the room, vertical windows take the dimension of the columns to express their affinity. There is an element of reciprocity in this compositional device as well, in that a size which is primarily associated with structure and solidity is now found in the opposite role of openness and light. Dimensional coincidence is also employed in the floor pattern, where the sizes were generated from the column and from window mullions, and in the size of the upper lights of the windows which correspond to the size of the main beams.

83      AXONOMETRIC STUDY OF ALCOVE, at southern end of social room.





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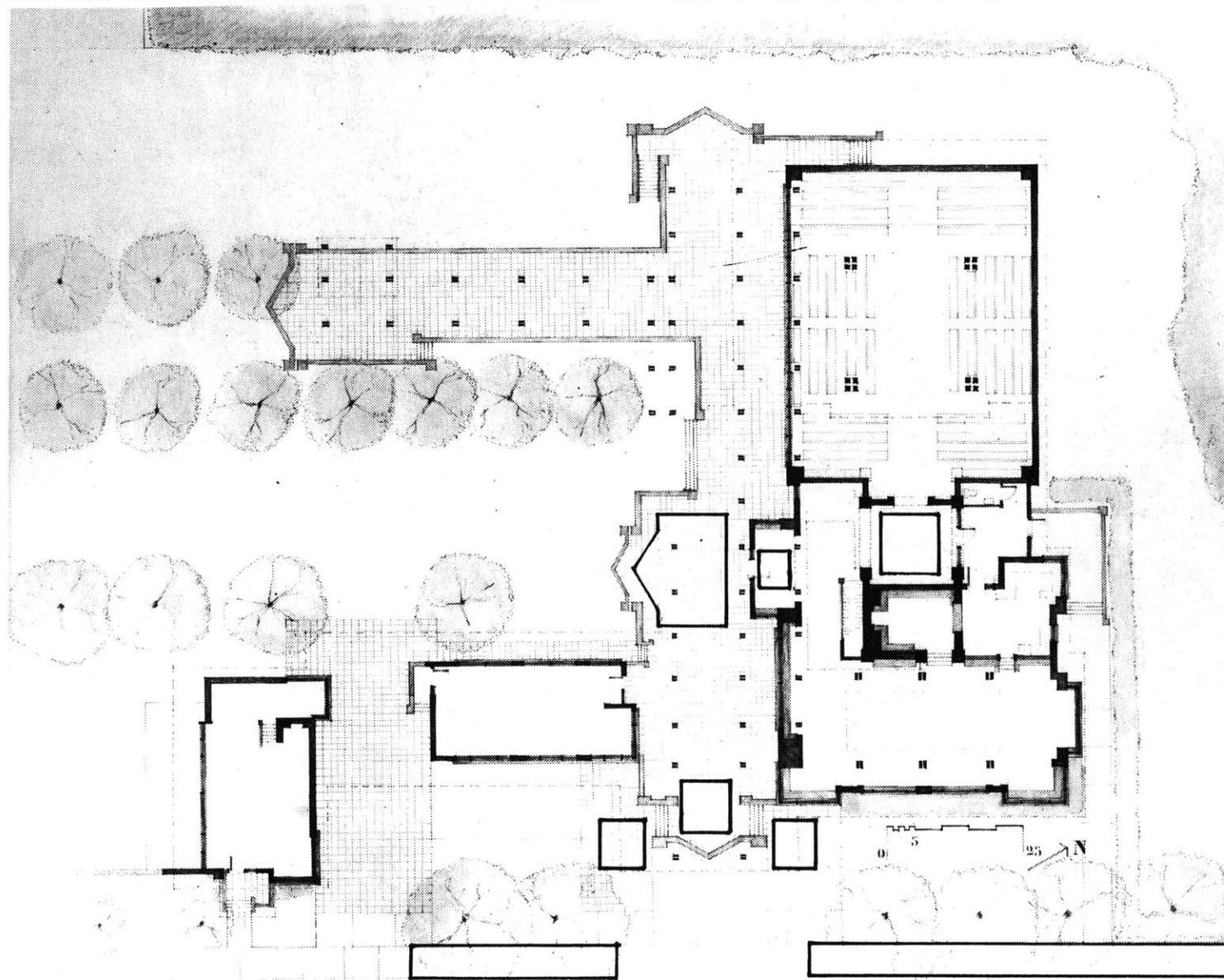
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At Flying Moose, as everywhere, the days and weeks are made up of meal-times, bed-times, classes, campfires, and trips--the pulse of the camp. The most important of these rhythms is the departure for and arrival from the weekly trips. With a final glance at the lake the trucks pull out from the clearing in front of the lodge and down the road, away from the security of life in camp and into the freshness of unexplored territories. A return from day on the trail, carrying new thoughts and experiences, is a lengthy transition. The truck turns off Route 7 onto the dirt road to the fish hatchery and turns again onto the steep and rutted road to Craig Pond. As the truck climbs the final hill and emerges from a tunnel of trees, the roof of the kitchen pops into view. The trip is over.

The meeting house, too, has a rhythm of meetings for worship, meetings for business, Sunday lunches, weddings, memorial services, committee meetings, and classes. Here, too, arrivals and departures mark the ebb and flow of the people to and from this source of community. In the design, there are a number of potential points of "arrival" and "departure," depending on the situation and the weather. One begins to feel part of the place when one turns off Brattle Street and comes under the trees. The three steps up off the street imply another sort of engagement with the building, though it may only be to pass under the second floor into the garden. The area overlooking the garden and the corresponding space inside provide increasing degrees of commitment to participation in the life of the building and the community.



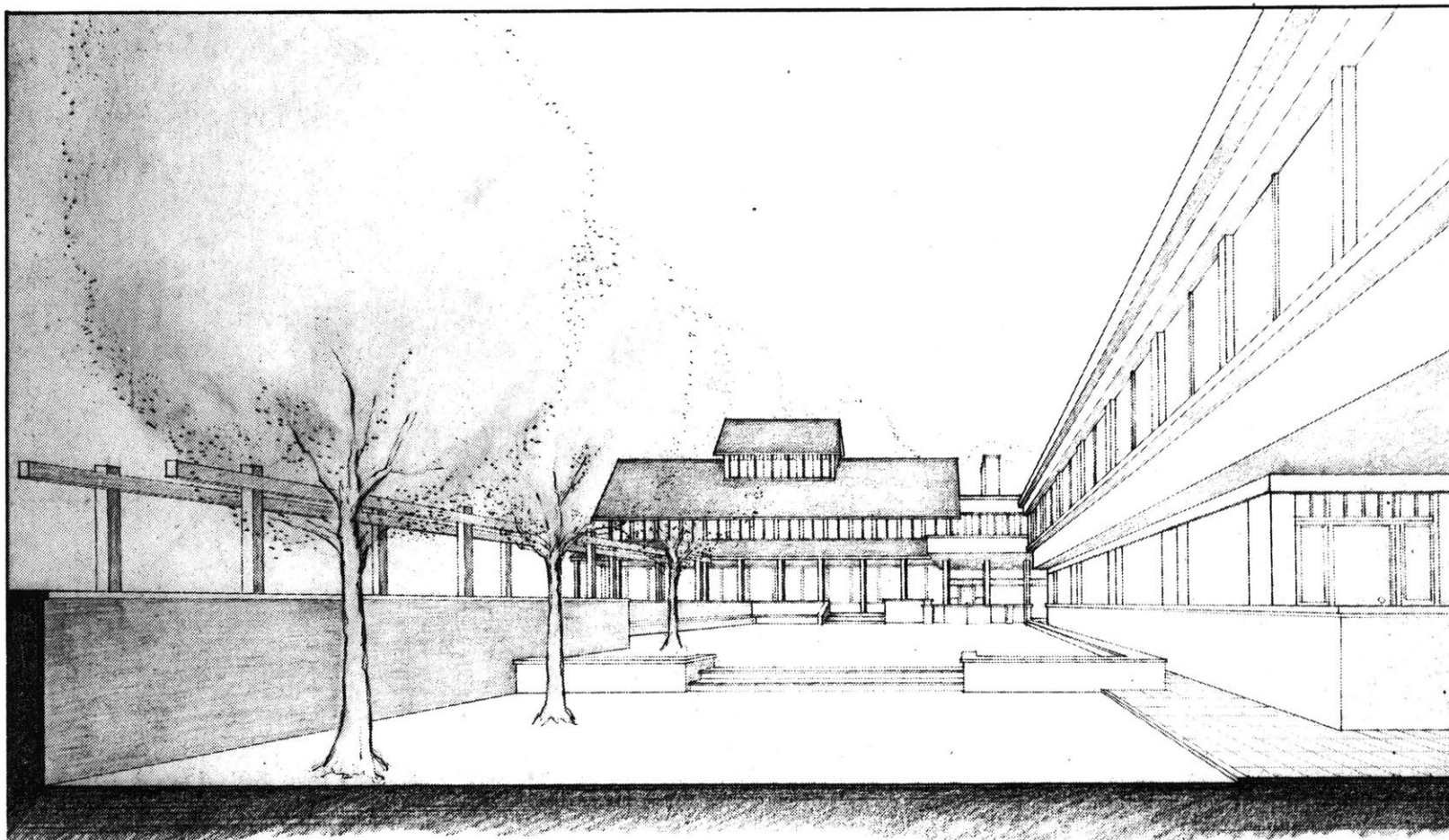


84 PLAN, showing "arrival areas."



The preceding work is based on the belief that continuity of understanding and experience is a primary goal of design. The natural landscape is identified as the primary physical continuity, and my personal experiences in the Maine woods are used as a reference throughout. Possibilities of literal continuity with the landscape, such as extending Longfellow Park into the meetinghouse garden, as well as linguistic or compositional continuities, such as conceiving of columns as trees, are examined. Clearly there are many other landscapes and other attitudes toward language and composition which could be fruitful in a design process. I feel the references and attitudes I employed are appropriate to the particular site, program and building method.

While the Institute requires that the thesis be bound and submitted in duplicate, the ideas in it are only beginning to bear fruit. The completion is important inasmuch as it is an opportunity for examination and criticism, and provides a starting point for a fresh beginning.



85



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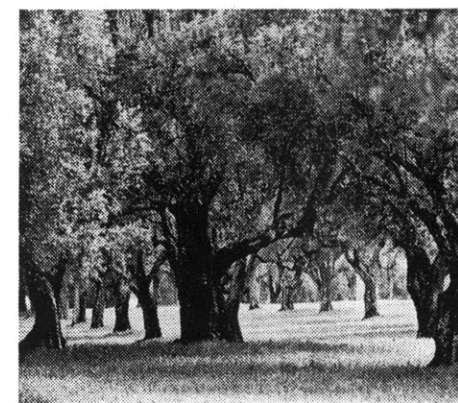
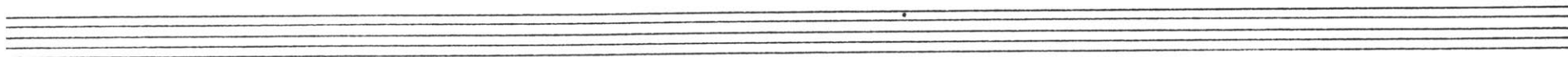
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## Epilogue

The thesis opened with a pair of word sketches describing the differing sensations of being lost and feeling safe in the woods. I have been lost in the woods many times, and, each time, I have discovered a new way of finding myself and returning to safety. I now know my way around the forests near Flying Moose Lodge fairly well. I have learned to use a map and compass, follow trails, and climb a tree when necessary, to pinpoint my location in what once seemed to me to be a vast wilderness crisscrossed with logging trails.

In some sense, learning to design is much like learning to find your way in the woods. Each endeavor has its strategies, principles, tricks and inspirations; and in both cases, one usually knows when one is on the right track.

This thesis is not my first trip into the world of design, but it is an early one, and the careful reader will doubtless notice the hesitations, repetitions, and misinterpreted references that the newcomer falls heir to. I trust that he or she will also catch occasional glimpses of the designer striding, if not confidently, at least with some understanding, and in good company, through this fresh territory.





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## APPENDIX I: the Program

While solving the program was not a primary focus of this design investigation, the following information was used as a basis for the design projections.

The Cambridge Friends meeting has a resident membership of about 400 Friends, with average attendance at meetings each Sunday of about 300. The following program is intended to satisfy the needs of a slightly larger meeting.

Meeting Hall (to seat 175)		2100 sq. ft.
Clothing Room		1600
Friends Center		7500
including:		
collective eating	1200	
offices	700	
library	350	
sitting room	500	
kitchen	550	
first day school (7 @ 375)	2600	
entry, circulation, storage	1100	
mechanical	500	
Resident's Apartment		1900
Guest Apartment		<u>900</u>
Total		14000 sq. ft.

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"This is an abbreviated list of activities which the Meeting House and Center accommodate in the course of a year.

Two Meetings for Worship regularly each Sunday.

Monthly Business Meeting and supper.

A First Day School of eight classes with an enrollment of 190.

Regular Young Friends activities including lunches and discussions.

Young Adults and Young Mothers gatherings.

The AFSC Clothing Workroom program - including lunches.

The joint counselling for the Draft program with AFSC.

Regular committee meetings for the Meeting and other Friends groups.

A meeting place for organizations with similar goals.

The Meeting offices for the Executive Secretary, First Day School Coordinator, Office Secretary, and living quarters for Executive Secretary.

A Guest Room for visiting Friends and inviting parlors and library for all who wish to use them."

"Needs related to the spiritual health of the Meeting which are somewhat dependent on the physical plant:

1. Young Friends Social Gatherings.
2. Fellowship within the Meeting itself as well as with visitors.
3. Display space for Quaker literature and other pertinent material.
4. A quiet library for reading and study.
5. Mingling of all ages in coffee hours.
6. Adult education Sunday mornings.
7. Smaller functioning Meeting for Worship groups on Sunday mornings."

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## APPENDIX II: Traditional Friends Meetinghouses

"The Quaker meeting houses were designed to fill only the bare necessities. . . . There was no altar, no pulpit, no choir or provision for music in the colonial period. The auditorium was furnished with plain wooden benches, usually without cushions. Many of them had a gallery, which usually was used by the children. Two entrances were provided in one wall, which enabled the men and women to enter their separate meetings for business simultaneously. A moveable partition down the middle of the auditorium separated the two meetings, and it could be removed to open the auditorium as one room for meetings for worship. At the end of the room, there were facing benches on a raised level for those who had been appointed to have oversight of the meeting and those accustomed to speak in meeting. Decoration, ornamentation, and features of comfort were avoided, as being worldly and diverting from a spiritual attitude. In general these features have been retained in current practice. In many meeting houses however, modern facilities for heat and light have been installed, and rooms have been added for school and other functions."

(Rose, 1963)



Most Friends meeting houses on the east coast of the United States were built previous to the American Revolution, and many meeting houses built since that time have been facsimiles of the colonial meetings. While there is some variation in size, layout, and detailing of these buildings, it is a quick task to describe a "typical Friends meeting house."

I am including photographs, plans and a typical section of meetings in this country, as well as in England, where often the structures were not originally intended as meeting houses.

- 86 PLAN, Pard Shōw Meeting, Cumberland, England (1672).
- 87 PLAN, Radnor Meeting, PA (1718).
- 88 PLAN, Mullica Hill Meeting, NJ (1808).
- 89 EXTERIOR, Abington Meeting, PA (1786).
- 90 EXTERIOR, Radnor Meeting, PA (1718).
- 91 INTERIOR, Come to Good Meeting, Cornwall, England (1710).
- 92 INTERIOR, Jordans Barn, Buckinghamshire, England (17th Century).  
This barn was once used as a Friends meetinghouse.
- 93 DIAGRAMATIC SECTION, typical, drawn by author.

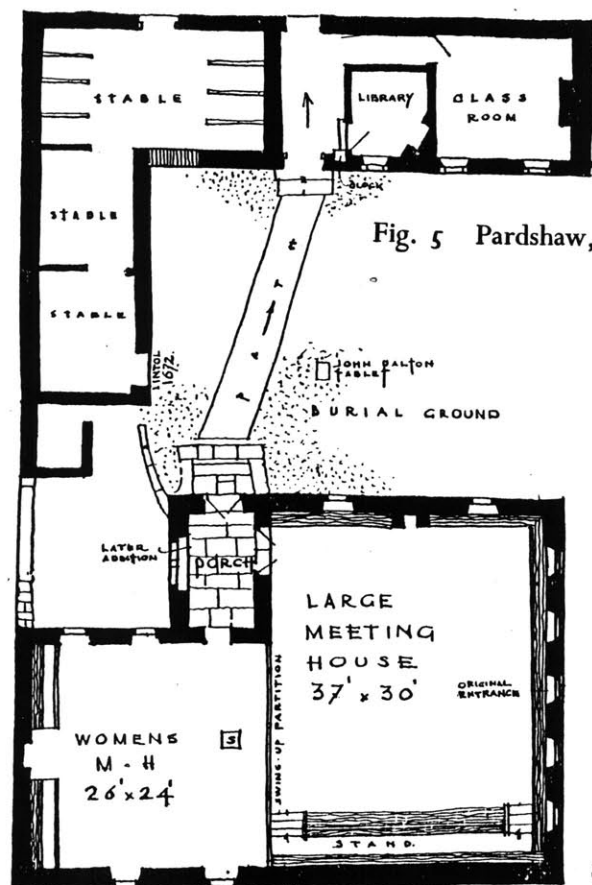


Fig. 5 Pardshaw, Cumberland (1672)

36

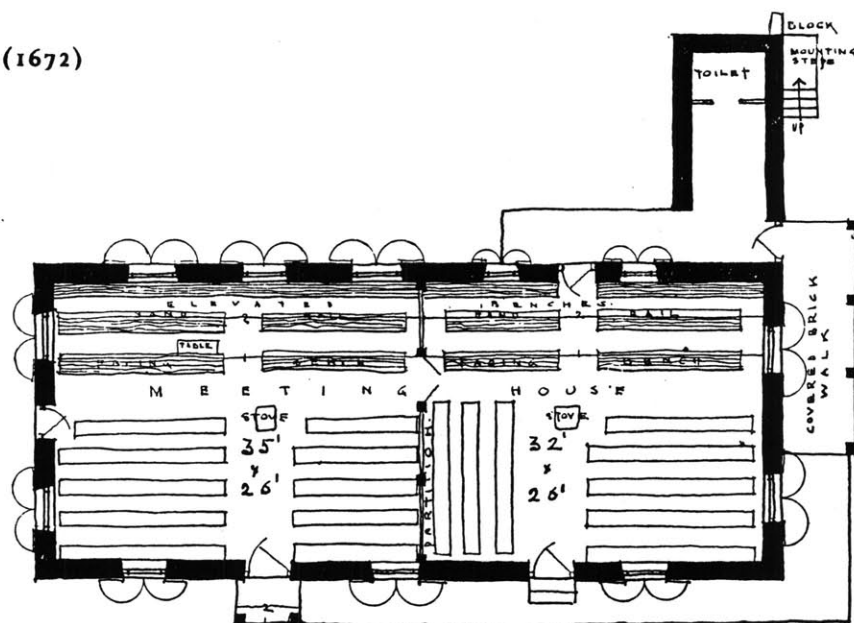
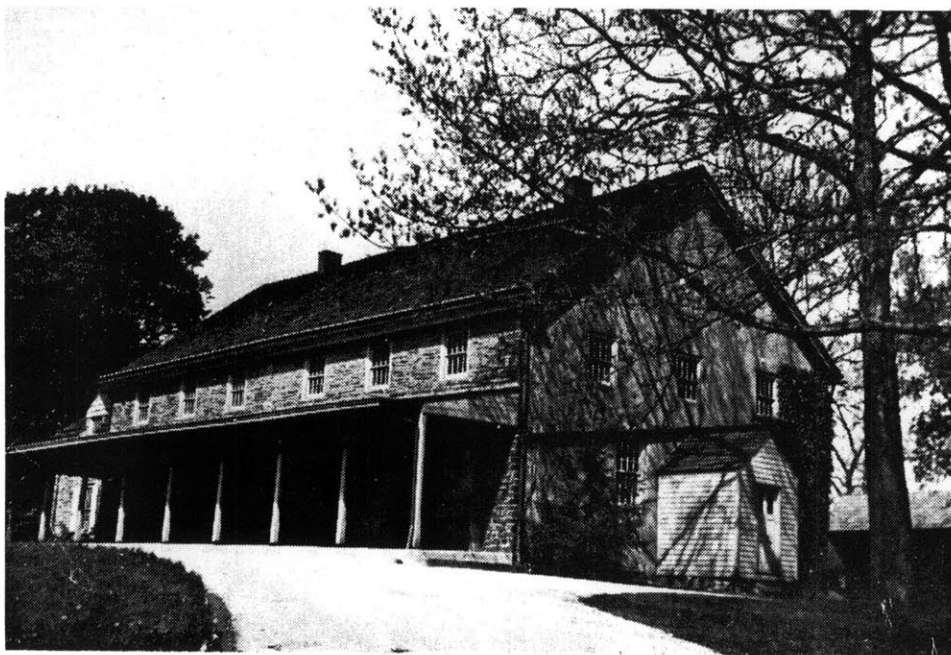


Fig. 47 Radnor, Pennsylvania (1718)

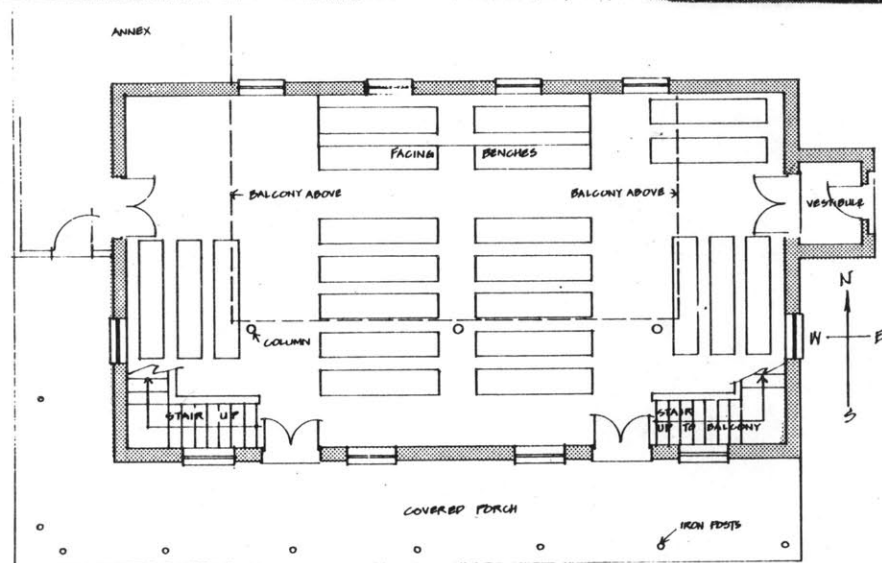
A typical American plan with Stand or facing seats on the long side and doors both sides.

87



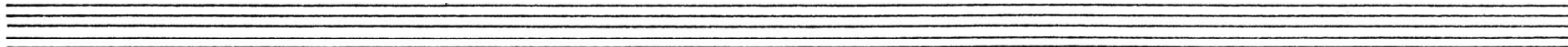


89



FLOOR PLAN

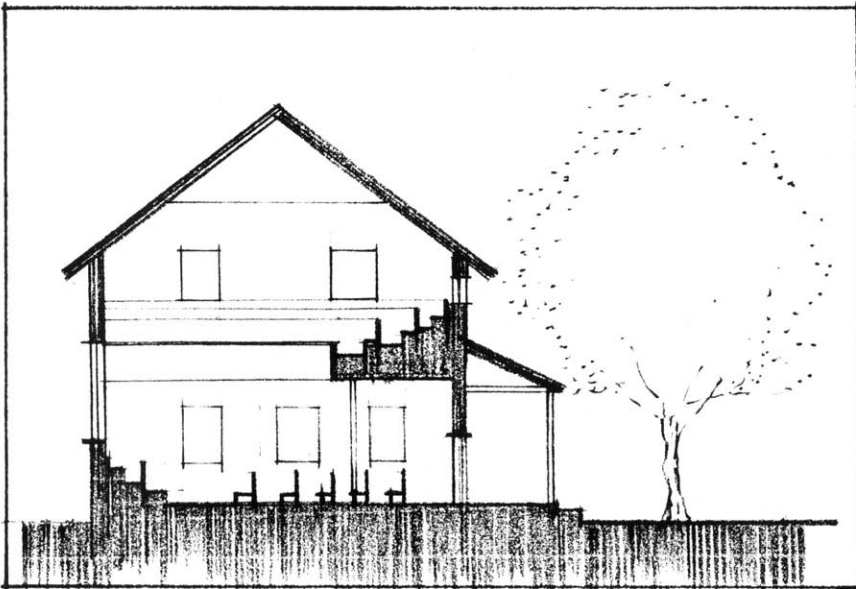
88







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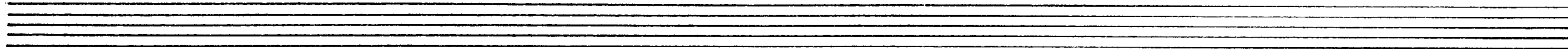
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## PHOTO CREDITS

1. by the author, 1976
2. U.S. Geological Survey, 1955
3. University Prints, L 28
8. Postcard, author's collection
15. Braunfels, 1972, p. 80
16. Hitchcock, 1972, figure 330
17. McCoy, 1960, p. 25
19. Cooper, 1980, p. 25
23. Kuck, 1968, p. 76
24. Gardens Old and New, 1901, p. 56
25. Norberg-Schultz, 1979, p. 26
26. Nelson, 1968, p. 172
27. Scranton, 1972, figure 87
29. author's photo
31. Hitchcock, 1972, figure 165
47. Norberg-Schultz, 1979, p. 43
48. author's photo
50. Lippincott, 1952, frontispiece
51. Alexander, 1977, p. 548
56. Hitchcock, 1972, figure 349
58. Hayden, 1976, p. 87
63. Hitchcock, 1972, figure 184
65. Hanks, 1979, plate 1
75. Source unknown
77. author's photo
79. Hanks, 1979, figure 115
86. Lidbetter, 1961, fig. 5.
87. Lidbetter, 1961, fig. 47.
88. Baillere, 1981, p. 8.
89. Lippincott, 1952, p. 28.
90. Lipponcott, 1952, p. 102.
91. Southall, no date, p. 70.
92. Lidbetter, 1961, plate LIX.





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